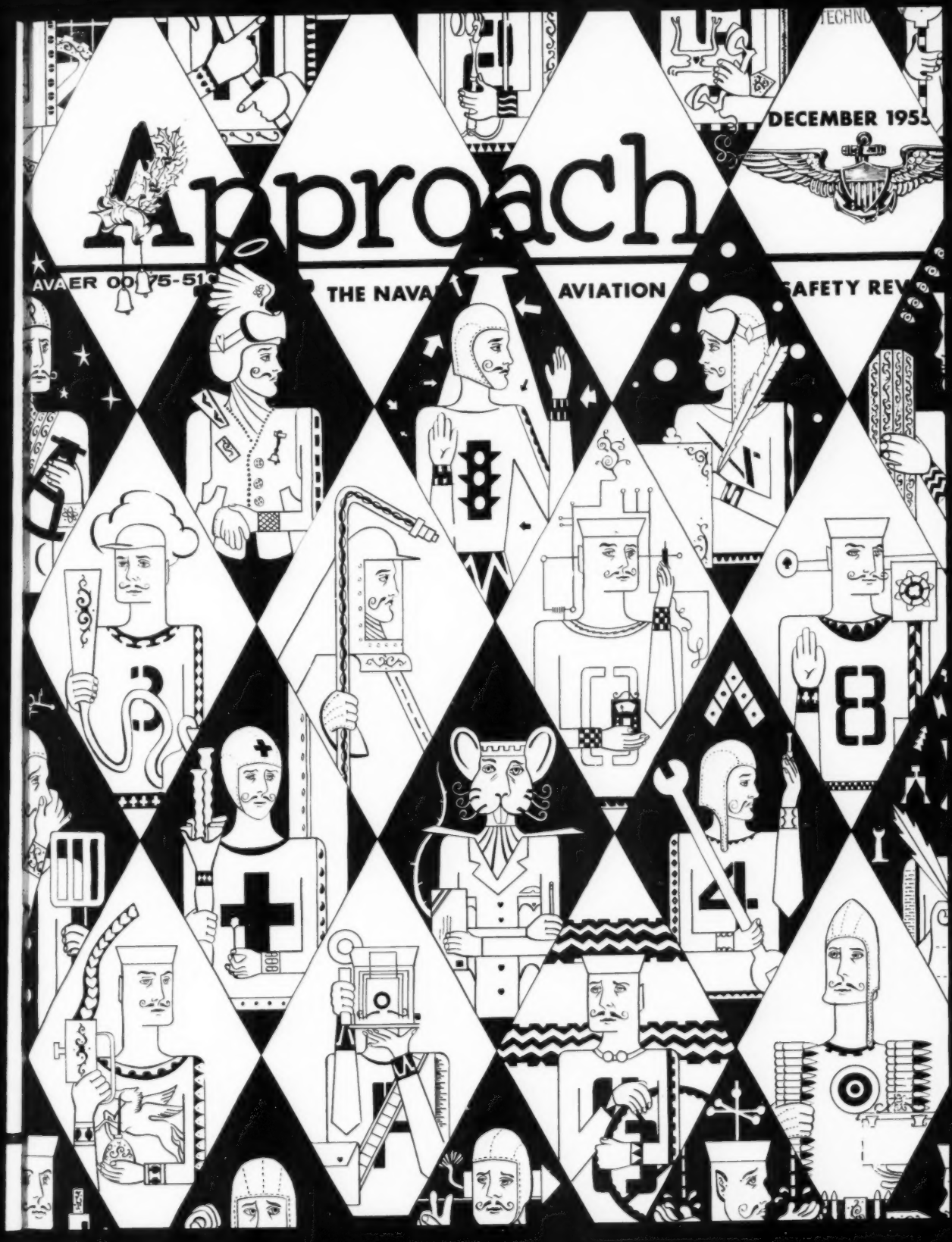

Approach
DECEMBER 195
AVAER 00-75-51
THE NAVA
AVIATION
AFETY REV

Approach

THE NAVAL AVIATION SAFETY REVIEW

DECEMBER 1955

Vol. 1 No. 6

Prepared by the U.S. Naval Aviation Safety Center

Director
CAPT M. B. Williams, USN

Head, Literature Department
CDR P. L. Ruehrmund, USN

TABLE OF CONTENTS

Command Editorial 1
Can You Stop This? 2

FLIGHT OPERATIONS SECTION

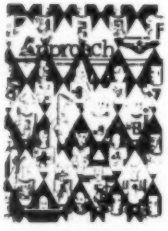
The Big Grin 8
Angels in Distress 12
Anymouse and His Hairy Tales 18
Truth and Consequences 22
Airportitus 24
Safety Council Notes 28

AERO-MEDICAL SECTION

How to See at Night 30
Safe Water Landings 32
Crash Rescue 34
Notes from the Flight Surgeon 35
Sign Language Quiz 36

MAINTENANCE SECTION

Muscles or Missiles? 38
Elbow Room 41
Let's Talk Torque 42
From the Ground Up 46



ON THE COVER

The best deal a pilot or an airplane ever had—that's the general idea of this month's cover variation wherein more than 20 aviation rates and billets are depicted in a playing card design.

Only through the constant efforts of these and many other individuals can the answer be found to such problems as December's aviation safety theme of "Stopping Ground and Taxi Accidents."

As you try to recognize these key figures in naval aviation please note the holly wreath, which we offer with our best wishes for a Merry Christmas and the safest of New Years.

Editorial Staff

Editor, A. B. Young, Jr.; Managing Editor, LCDR R. P. Brewer; Associate Editors: LCDR R. A. Eldridge; J. T. Le Barron, JOC; J. C. Kiriluk. Contributing Editors: CDR A. P. Rush (MC); H. M. Howard.

Art and Production Staff

Art Director, R. A. Genders. Illustrators: LT E. T. Wilbur, R. B. Trotter, V. L. Fletcher, DM1; Production Asst. M. Roffo, DM2.

The printing of this publication has been approved by the Director of the Bureau of the Budget, 9 Dec 1954. This periodical contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders or directives unless so stated. Material extracted from Aircraft Accident Reports, OpNav Form 3750-1 and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Names used in accident stories are fictitious unless stated otherwise. Photo Credit: Official Navy or as credited. Original articles may be reprinted with permission. Contributions are welcome as are comments and criticisms. Address all correspondence to Director, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Va.

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 30 cents (single copy). Subscription Price: $2.50; 75 cents additional for foreign mailing.

VICE ADMIRAL A. K. DOYLE, USN
CHIEF OF NAVAL AIR TRAINING

From the days of the flying Jenny, we have traveled far and rapidly to the present day high-performance jet aircraft. But, even though our progress in the field of aviation has been rapid, we are still plagued with unnecessary aircraft accidents that are costly in lives, equipment and money.

One of our most important over-all aims is to eliminate unnecessary aircraft accidents without altering our present pace of training and high state of combat readiness. To this end, we must continue to pursue a realistic and aggressive program of accident prevention. The fine progress evidenced in the field of aviation safety these past months is indicative of this high state of safety consciousness throughout the Navy.

Further evidence of the importance we place on aviation safety is afforded by the establishment of the Aviation Safety Officers course at the University of Southern California. By careful utilization of the graduates of this course, we hope to realize further improvements in the field of aviation safety. We in the Training Command feel that our acheivement during the past fiscal year in reducing our accident rate by 26 percent over the best previous year is due in great measure to the work of these graduates.

Even though we shall have the aid of the technically trained aviation safety officer and other experts, we must not labor under the misconception that the aviation safety officer can take care of the job of stopping all accidents. Aviation safety is not only a command function, but is an all hands job as well. The success we attain in the prevention of aircraft accidents is entirely dependent upon the degree of participation.

Those who have contributed vigorously to the field of aviation safety and the dρwnward trend in our aircraft accident rate may take pride in knowing they have added to the well being of the entire Navy and may even have saved lives and valuable property.

A. K. DOYLE

Everyday at least 50 people witness a ground or taxi accident. These accidents cost you as taxpaying members of the Navy a cool 28 million each year, so—

CAN YOU STOP THIS?

Take a look out the window there at the air station. See those airplanes parked around the ramp or moving to and from the runway? The fuel trucks and maintenance vehicles bustling about their chores? Situation normal, business as usual.

Now take a closer look at the operations scene. (You gents on the bird barges might take a look out the hatch at the activity on the flight deck). Can you spot, in this familiar picture of ground activity, any potential threats to the well-being of pilots, ground personnel, taxpayers or aircraft?

How about that NC-5 barreling along over there towards those jets. Watch him zoom back to plug that *Banshee.* Whooie! Real sharp, eh? But sort of rough on airplanes if his foot slips.

Or look down there at the *Jaybird* taxiing away from the line—where's the taxi director? Not much elbow room there but plenty of room for an expensive error. How about the big boat being moved over by the seaplane ramp—looks like they're snaking it along faster than the wing walkers can run—and dig that P2V heading into the barn without a wing walker in sight—is this aircraft handling? There goes an AD humping it

Because visibility is limited at best, taxi directors always play a vital role.

along behind that tractor, and I swear there's no brakerider in the cockpit.

And look over there where somebody's giving that R5D a turnup signal—brother, if they don't move that checkstand out of the way they'll be changing props all night! Or maybe you can see that plane director bringing the *Beechcraft* into the chocks—the SNB is just about to lose an argument with the port wing of that F9F parked in the next spot.

You flat top folks probably won't have much difficulty spotting some similar examples of trouble in the making around the flight and hangar deck—the bend and dent gents are not all shore-based!

Okay, so maybe you won't be able to detect any impending accidents as you look out *your* hatch or window. But believe us, the daily reports of ground accidents makes a record keeper become sort of discouraged with people, machines and the like.

In watching the statistics for just a 9-month period we were pretty shook to find that 118, count 'em, 118 airplanes were banged up in 106 ground accidents—and none of these involved a piece of mobile equipment. Almost as many will get banged up *that* way too, and you can get that story over on page *34*.

All this means that commencing right now, and for the next 12 months, some 7 million bucks of our money is going to go down the drain in the form of damage and repairs to 140 airplanes. It's going to happen mainly because somebody will goof—somebody just like you and you—pilot, plane handler, director, beachmaster, elevator operator, driver — somebody will pull some kind of booboo which will cost numerous dollars.

And if we keep on goofing, the tinbenders can expect to make minor repairs to 28 airplanes each month; the substantial damage fixers will have 9 more bent up machines to straighten out, and at least 2 airplanes will be bashed up enough for a major overhaul. And at least 1 airplane will never see service again—all completely unnecessary.

It is estimated that for a given year, the Navy loses 28 million dollars to accident involving forced landings, incidents and ground accidents. *Forced Landings* are defined as "those necessitated by conditions making further flight impossible or hazardous." *Incidents* are of a "general category and include accidents which are isolated or involve hazards such as collisions with birds, lightning and inadvertent loss of aircraft components." *Ground Accidents* are those which result in damage to aircraft not in operation are also included in this category.

The group we're presently interested in, the ground accidents alone, represents a total loss of about 13 million dollars and get this, approximately 6 million dollars of that figure is charged to accidents involving mobile equipment.

What kind of accidents are these? Here are a few typical examples. Multiply these throughout naval aviation and the picture isn't pretty:

P5M

The port wing of a P5M struck a sentry tower while being towed by a tractor. It sustained considerable damage. The tractor driver didn't hear the shouts of warning from the plane crew and the

wing-walkers were unable to keep up the pace because of excessive tractor speed. In addition, the driver failed to follow the yellow guide line.

AF

The pilot of an AF was given clearance to taxi between two rows of aircraft and upon turning into its parking place the port stabilizer struck the nose section of an S2F. The cause: "inadequate number of taxi men qualified to handle the operation being conducted. Lack of visibility from the cockpit was considered a contributing factor."

TV

A TV-2 was being unhangared after storm warnings had been lifted and on being pushed out backwards the port tiptank hit a steel stanchion in the hangar. The cause was listed as "carelessness and/or haste in moving the aircraft without assuring enough clearance was available. The man riding the cockpit, said reporting authorities, could have prevented the accident had he been more alert.

HUP, SNB

A helicopter and an SNB were victims of towing accidents when tie-downs were not completely removed prior to movement.

AD

An AD was unchocked and rolled back into a windmilling prop of an aircraft parked directly behind it and received substantial damage. The aircraft was not chocked on signal from the plane director but the pilot assumed it was and left the cockpit. During respotting of an AD on the flight deck it was pushed into the tail of another AD. The nose of a jet turning up made whistle signals impossible to hear. The plane captain failed to be alert for hand signals.

TBM

A TBM-3R on being taken down to the hangar deck via the No. 2 elevator hit a bulkhead when plane handlers pushed aft instead of forward as signalled by the plane director. Inexperience and confusion of the crew was listed as cause of the accident.

AJ-AD

An AJ was damaged substantially when an AD on an elevator was raised from the hangar deck level. The AD prop pierced a wing of the AJ.

HUP

A helicopter received overhaul damage during respotting operations when the elevator operator did not notice its starboard gear on the elevator. Upon dropping the elevator the helicopter toppled on its side.

P2V

A P2V wingtip nacelle struck the corner of a hangar because of the improper placement of the wingwalker.

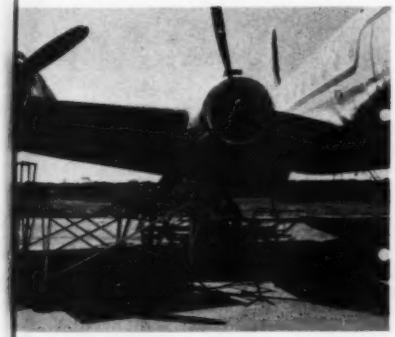
P5M

Two P5Ms received damaged tails when the beachmaster failed to check tail clearance during the process of tailing one of them into the hangar.

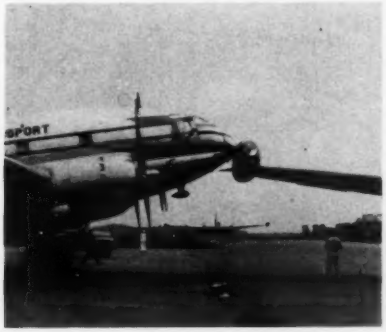
These are but a few of examples of the plane handling accidents which appear most frequently on the list of ground accidents. A brief study will quickly reveal that accidents of this nature are in the main, avoidable.

In this informal survey the cause-factors of the majority of plane handling accidents can be lumped into the following categories:

★ Personnel Error—this broad category includes depth perception or other visual



Before turnup make sure you're "all clear."



Wingwalkers are a *must* with the big ones.

Every month nine aircraft receive Substantial Damage.

An unchocked AD rolled back into a windmilling prop.

becoming larger and heavier. Therefore towing, parking, tie-down and other plane handling procedures must be improved to obtain optimum safety and efficiency. Because of this increase in size and weight all hands must keep in mind that utmost care and caution must be exercised during all ground operations.

It is also most significant in these days of rising costs, that if present trends are permitted to continue, the losses attributed to ground accidents will rise substantially higher. Further, the continuing pressures by fellow taxpayers which demand maximum economies within armed services spotlight those areas in which savings can be attained. ●

The bigger they are . . . the more special are the precautions . . .

error, misjudging distance, clearance, slow reaction and darkness.

★ Excessive speed.

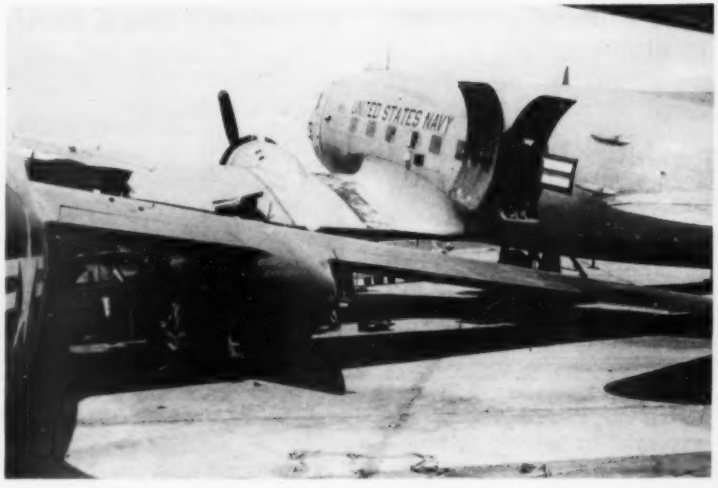
★ Towing without proper placement of wing walkers.

★ Misunderstanding of signals.

★ Taxiing without a director.

★ Excessive power (jumping chocks).

As indicated by the cause-factors this problem is related directly to the selection and training of personnel for the responsibilities involved. The problem is further complicated by the fact that aircraft are



FLIGHT OPERATIONS

SECTION

HAIL AND FAREWELL—It's just a short walk from *Corsair* to *Cougar*, but the ease of transition depends largely upon the "course" you take. For the latest in prop-to-jet training, discover the origin of "The Big Grin" at JTTU, beginning on the next page.

The Big Grin

You're a Commander, USN, with 2500 hours. It's been a long time since you were tail-end Charlie on that historic mission of bent-wing jockeys out in the Pacific during WW II.

Of late you've had a hitch with a ship's company, then a tour in the nation's capitol, both including some proficiency tooling in the trusty *Beech*.

At last comes word from BuPers that you're to take command of a fighter squadron in AirPac, or maybe it's a CAG spot. Now that's more like it. And it didn't come a tour too soon, either, 'cause Ole Pappy Time is pickin' your pocket, and that 40th birthday is creepin' up.

As the novelty wears off, so does the feeling that you've got it made. Look at that beautiful swept-winged machine—one of Mr. Grumman's finest stovepipes. They'll bust mach with no strain. And who's going to lead the strikes, boy? You are—you who think a T-bird is something you missed at the Washington zoo!

As the unwritten code might say, you can't ask your men to do anything you can't do. And you without a charcoal green pressure suit to your name. Hmmmm.

You note that your orders direct you to proceed to JTTU (Jet Transitional Training Unit) NAS Olathe, for a period of six weeks' instruction. You are to complete pressure chamber and ejection seat checkout before leaving your present duty.

So you ask what this JTTU course is all about. Some Buz Sawyer outfit, maybe? Well, hardly. It's a course to check out staff and senior aviators in the latest jets. Let's get the straight pitch told in terms of the experience of a fellow aviator, CDR Quentin Crommelin who just recently completed the course.

The big grin—that's [illegible] of Tiger Crommelin when, [illegible] jet convert, he returns from his first "[illegible]" [illegible] sound barrier at the Jet Transition Training Unit, NAS Olathe.

Students and instructors work intently together to assure maximum training value on each mission. Graduates report sound briefing a big factor in their safe, smooth transition to swept-wing jets. In the few months since April 1955 when JTTU was activated there have been more than 100 naval aviators checked out in jets, including the skipper of the *Forrestal*, Captain R. L. Johnson.

Personal equipment is life itself in jet aviation. The course includes flight surgeon briefing on equipment, high altitude flight.

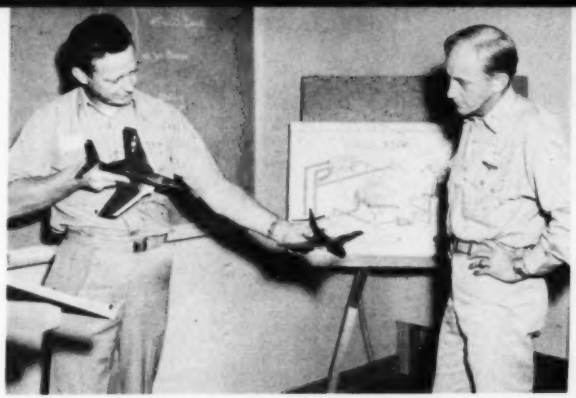
No matter what the yellow sheet says you make sure for yourself, including a personal check of fuel, control surfaces.

It's no lunch hour checkout when you climb in for that first *Cougar* hop. It climaxes cockpit checks, taxi practice, link time to emphasize new speeds and procedures and F9F trainer sessions. None the less, it's facetiously said at JTTU that you should log your first hop as passenger time!

Professional aviators like the commander, whether they're taking SNJ or the latest from Bethpage, have a good gander at that yellow sheet before leaping off into the blue.

Your first ride is in Lockheed's faithful T-Bird. You'll get about six hops before you go to F9F-6s, where the syllabus takes about 12 more hops. All your flights in the TV are dual, and all your F9F hops are chased by an experienced instructor. Training runs the gamut from fam, formation, instruments, to tactics and cross-country. While it's natural that older aviators have some apprehension of new jet experiences, they usually find they love it. The instructors report that the older pilot's experience helps keep him out of the trouble that youngsters often get into.

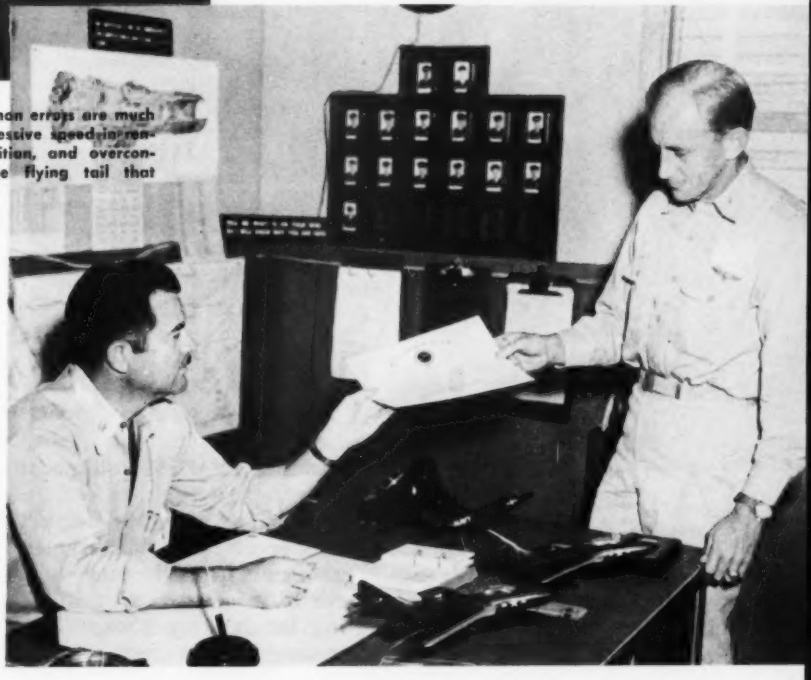
CDR Crommelin and MAJ L. K. Bronleeve check the syllabus on formation hop D-1 before joining their instructor in final briefing. The syllabus is posted in the pilot's lounge, and includes detailed listing of common errors and problems of each type hop.



LCDR T. J. Conroy demonstrates a gunnery run to Crommelin in a ground school discussion of current tactics. Classes also cover engine and aircraft operations extensively.

At JTTU, as in other good outfits, top flight maintenance as well as top flight briefing and instruction pays off in a good safety record. Helping meet JTTU's heavy schedule are C. A. Magg, ADC; J. E. Erwin, AM1; J. H. Snowden, AD1; and J. L. Carney, AMC.

Formation hop looks pretty good here. Common errors are much the same as in other formation training—excessive speed in rendezvous, getting sucked in, poor wing position, and overcontrolling. One student said "it wasn't the flying tail that bothered me—it was the flying nose!"



Now those experiences of the slow acceleration of the jet engine, the first difficulties at seeing at high altitude, the relative quiet, the new speeds and ease of control and the amazing flameout glide distance possible in jets are all under his belt. Ditto on the problems of jet navigation, cruise control, and current tactics. So CDR Crommelin gets his graduation certificate from CDR James B. Cain, Officer-in-Charge of JTTU. He also gets a coveted "Boomer Card" in recognition of his membership in the Royal Order of the Mach.

Angels in DISTRESS

ACCORDING to a recent compilation at the Naval Aviation Safety Center, the very favorable downward accident trend experienced by helicopter since 1951 has been interrupted in recent months, and the current trend for 1955 shows an upswing.

As with fixed wing aircraft, pilot error caused the greatest number of helicopter accidents and most happened during the landing phase. Pilot misuse of and inattention to the fuel system increased the number of forced landings of rotary wing aircraft from fuel exhaustion.

Major accidents, in which material failure or maintenance errors were contributing causes, decreased in the

Hard landings following auto-rotations disable many helicopters each year.

past two years. Such accidents are still an appreciable factor in helicopter operations, so there is continuing need for high standards of ground maintenance.

Since the helicopter lands more often per hour of flight than any other type aircraft, this readily accounts for a high accident potential from this maneuver. A breakdown shows two major classes of accidents: Hard landings following practice auto-rotations, and blade coning accidents during the rotor engage/disengage phase.

Auto-rotations

Unfortunately, reduction of the emphasis on practice auto-rotations is not a simple answer to the reduction of the accidents from that cause. The high number of emergency or actual auto-rotations as a result of helicopter engine failure makes it essential that pilots be thoroughly familiar with auto-rotations, and that they practice the maneuver frequently.

CORRECTION

In the article "Is that Landing Area ALL CLEAR?" on page 23 of the Nov. APPROACH, the first sentence of the last paragraph should read "Field markings for a landing site for heliport of semi-permanent nature should be outlined by a large circle in LIME or white paint with arrows indicating the best approach lanes. The word "lines" was inserted for "lime" by error.

Auto-rotation by helicopters can be compared in importance to the flameout landing procedure for jets however, an actual touchdown is not intended in most practice auto-rotations. Recovery power is applied at a low but previously determined safe altitude. But incorrect technique often results in an inadvertant hard landing with resultant damage to aircraft.

Critical Point

The sore spot in helicopter auto-rotations is improper level-out or flare close to the ground. This includes flaring too steeply, continuing the descent below a safe altitude failing to level-out or leveling out too high with a loss of rotor RPM and lift.

Other specific causes of accidents in the landing phase of auto-rotations are: heading downwind during the attempted recovery, entering the maneuver at too low an altitude to permit a safe recovery, and practicing auto-rotations without sufficient instruction or adequate supervision.

Previous recommendations for prevention of auto-rotation trouble have been made by the Naval Aviation Safety Center and squadron accident boards. They concern the

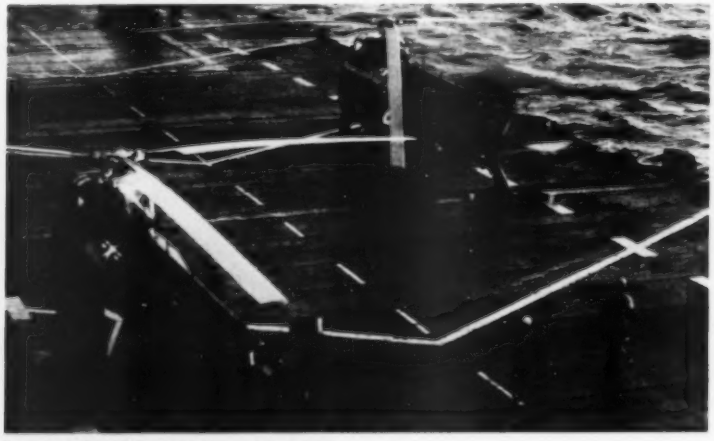
For safe helicopter operations good maintenance is always a priority.

The HO3S pilot in this unusual photo sequence had to apply his auto-rotation technique quickly and correctly when his engine quit.

Angels in DISTRESS
(Continued)

need for closer supervision; more accurate wind knowledge; the selection of suitable terrain and altitude conditions, and review of the hazards of practice auto-rotations at high gross weight. These recommendations are still applicable.

Additionally it was recommended that the total number of auto-rotations practiced during any one flight be reduced when pilot fatigue becomes a factor in reducing the pilot's alertness or reaction time.



Correct and timely wind information is important in preventing blade coning accidents.

Blade Coning, Flapping

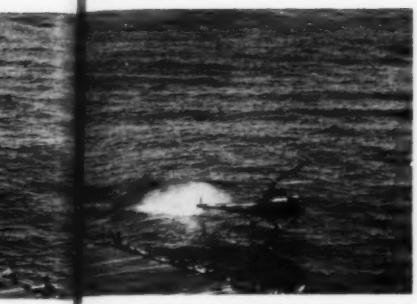
As stated previously, blade coning and flapping occurs during the period when the main rotors are being started or stopped. Rotor speed is comparatively slow at this point and the pilot has very little control of the blades. The blades are extremely flexible and under the force of high wind or gusts can bend sufficiently to damage either the blades, fuselage or tail section.

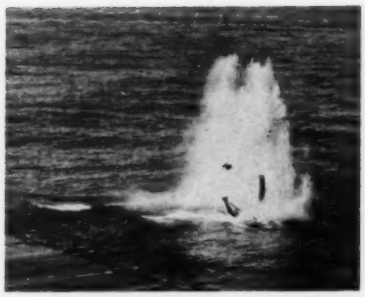
This problem is particularly critical with the high over-the-deck winds required for other flight operations on a carrier. *The relative direction of the wind, its velocity, and the degree of turbulence must be within the prescribed operating limits of the particular helicopter.*

Twelve preventable blade coning accidents happened during the year ending 30 June 1955, and analysis shows the majority of these were aboard ship. Supervisory personnel error contributed to the increase of this type accident in the HO4S and HUP models.

Recommended action is to insure that helicopter pilots are given accurate and up-to-date wind information during the critical times of rotor engagement and disengagement. Also, that uniform, positive signals be employed by supervisory personnel to insure the pilot's awareness that operational necessity justifies the order to start or stop rotors under marginal or unsafe conditions.

Upon occasion a lack of general knowledge of the helicopter's limitations will create a critical flight situation. Pi-





lots are reminded of their responsibility to inform command personnel when in their opinion unsafe conditions exist.

Density Altitude

Failure to understand density altitude and its effect on helicopter operations created an accident category which was second only to landings. Increased density altitude results in a loss of lift by decreasing available engine power and lowering rotor blade efficiency. Temperature and humidity are two important factors which affect density altitude even at sea level.

In the engine, the fuel control system meters fuel on a mass flow basis, not differentiating between dry and moist air. Therefore, water vapor in the air causes a loss in maximum power by displacing an equivalent amount of dry air with incombustible water vapor. This results in a rich and less efficient mixture.

Rotor wing like fixed wings, will produce much more lift on a cool, dry day when the air is heavy and the barometer high.

Pilot understanding of the importance of density altitude and the timely and accurate dissemination of temperature and humidity information can assist in preventing this type of accident. For safety of flight, weather conditions, *terrain elevation* and gross weight must be carefully watched.

The effects of density altitude were not considered with this result.

Ground Cushion

Loss of lift may also be directly associated with and complicated by improper understanding or use of the surface cushion (ground cushion) which aids helicopter lift. When shifting from hover to forward movement this cushion disappears. A reserve of engine power should be available to enable the air-

A case of power settling.

craft to remain airborne until forward speed increases and transition lift is obtained.

If gross weight is high the helicopter may settle upon first leaving the cushion. A pilot will instinctively add some collective pitch to increase lift but this also increases rotor drag and lowers RPM.

Power Settling

Power settling is peculiar to helicopter operations but is not often encountered. It occurs generally during the let-down phase at rates of descent ranging from 500 to 700 feet-per-minute in conditions of low airspeed.

The condition results from the rotor blades working in their own turbulent air. The symptom of power settling is an inability to appreciably change the rate of descent with extra power. It is eliminated by transition into forward or sideward flight.

Recovery from power settling is necessarily accompanied by a loss of altitude so pilots should avoid conditions that induce it when operating near the ground.

Fatigue's a factor in 'copter flying.

From the arctic to the tropics the rotary-winged birds have proven invaluable. But due to their characteristics they require special handling.

Hardhats Help

From a review of the serious or fatal injuries received in rotary wing accidents for one year there is little doubt that the hardhat can reduce the number of deaths.

Eleven out of 15 fatalities resulted from head injuries. From past experience it is felt that these injuries could have been prevented if protective helmets had been worn. It appears that four cases involving serious injuries would have been fatal without hats.

Land/Launch Operations

Misunderstood or inadequate land/launch signals still result in pilots attempting to takeoff with tie-downs secured. These accidents are potentially the most dangerous for personnel in the vicinity of the helicopter.

Double-check all tie-downs when launching and carefully

follow the established system of tie-down removal. Shipboard personnel can assist by clearing the flight area of unnecessary personnel and by avoiding extreme pressure on the pilot or flight deck personnel to expedite operations. A

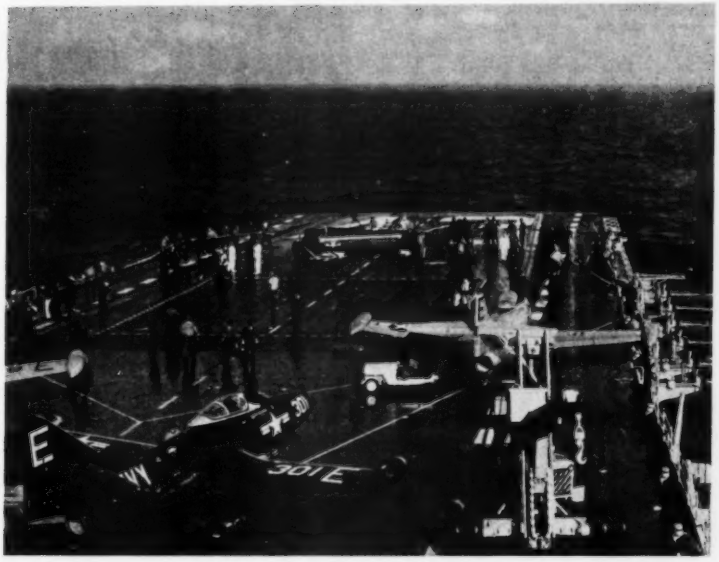
She flies like a rock with the tie-downs still attached.

delayed launch is certainly to be preferred over a wrecked 'copter and injured personnel.

Another consideration in shipboard land/launch operations is the ship's roll and pitch. The helicopter has a relatively high center of gavity and is easily turned over. During the land/launch phase on an unstable deck coordinated action is especially required between all personnel concerned with the maneuver.

Accidents and Reports

There appears to be no significant difference in the accident rate for any particular model or type duty. From statistics the HO3S, HO5S and HTL have the highest rates in the order listed. The HO4S, HRS and HUP follow closely in sequence. It is of interest to note that few of the HO4S shipboard accidents for fiscal 1955 were classed as pilot error.



Shattering rotor blades are as lethal as shrapnel—keep unnecessary personnel clear.

The many and varied missions assigned the chopper requires that accident boards be especially thorough and investigate each accident in detail. An encouraging sign is the fact that accident reports listing the cause as "undetermined" decreased during the last year. Design deficiencies and operational limitations can only be corrected by timely accident board recommendations backed by a complete analysis of all possible contributing factors in each accident.

In this connection another method of improving material or design deficiencies is squadron utilization of the FUR reporting system. For the complete story on this simple but effective system consult BuAer Instruction, NavAer 00.58A of 20 May 1955. The reporting forms are ordered in the same way as other aeronautical publications.

Though the whirlybird itself still has material and design weak points, past progress indicates that many of them can and will be overcome through cooperation of both designers and operators.

But while design is important the major responsibility for an early and continued improvement in the accident rate can only come through individual endeavor and understanding on the part of all those who have a part in helicopter operations. ●

ANYMOUSE and

LIP SERVICE

Anymouse was a crewman aboard an R4D-8 which made a fuel stop at an air station during a routine cross-country. The only gas truck available to refuel the plane had no ground wire attached to the hose nozzle and the nozzle leaked badly. When asked by Anymouse to explain such a situation the driver said he had reported the discrepancies three times.

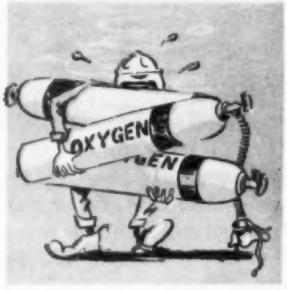
The plane captain informed the copilot of the situation and he brought it to the attention of the operations duty officer. The ODO in turn, directed the copilot to talk to the officer directly responsible for the fuel trucks.

Anymouse stated that the copilot declined as he felt he had already reported to the proper person and said "Just forget it, I'll make an official report to my squadron upon my return to home base." At that point the ODO called the appropriate officer. This officer readily agreed the truck should be fixed and not operated until it was repaired.

BOOBY TRAP

Anymouse took off in a TV on a combination parts pickup and instrument training flight. He filed and cruised at 25,000 feet with cabin altitude indicated as 16,800. On the return trip he was cleared on course for 31,000.

He reported "The oxygen rig was NORM-NORM in both seats. The pilot under the hood in the rear complained of anoxia. I felt great! Took the controls and promptly went all over the sky. I became apprehensive and switched to 100 percent oxygen (mistake) and commenced descent—luckily I could do it VFR. After advising Air Traffic Control and receiving clearance for 25,000, I cross-



checked the cabin altitude with actual altitude and found we weren't pressurized!

"After a few minutes at 25,000 both of us started to feel okay although we felt horrible for the next 2 or 3 hours."

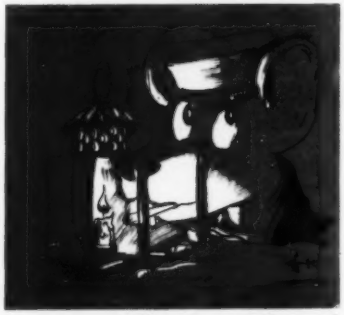
After a talk with the squadron flight surgeon Anymouse realized he must keep a close check on cabin altitude, and switch his oxygen regulator to SAFETY as soon as cabin pressure is lost.

The flight surgeon suggested that "pilots check the yellow pressure dump valve on each flight as it is easy to push it down (DUMP) while climbing in. The gadget locks in the DUMP position but not in the UP position."

The flight surgeon commented further:

"The TV-2 with its pressurization system, low-pressure oxygen, and manual A-14 regulator, is a booby trap for Navy pilots used to fully automatic systems of the high-pressure type. Advise all pilots be frequently reminded of the dangers."

OUT SMOKING LAMP



On a routine inspection of a WV-2 Anymouse discovered newly-arrived man smoking in the CIC compartment. After the horrified shouts were over, the man explained that fueling had been completed so he assumed it was alright to smoke.

Anymouse said the example here is fairly obvious. No knowledge of aircraft, procedures around aircraft, or safety measures can be as-

his hairy tales

Anymouse Reports are submitted by aviation personnel throughout the Navy who have had hairy or unsafe flight experiences. As the name indicates these reports need not be signed.
Reports are to help prevent or overcome dangerous situations. Forms for writing Anymouse Reports are available in ready rooms and line shacks. All reports are considered for appropriate action. Send reports to the Naval Aviation Safety Center, NAS, Norfolk 11, Va.

sumed in the case of personnel new to the Navy and aviation unless positive indoctrination is undertaken in each case.

MUTE TESTIMONY

Anymouse was chase pilot for the pilot of a *Guardian* who was under the hood on an instrument training flight. A change of radio channels was made and contact could not be established between Anymouse and the pilot under the hood.

The *Guardian* appeared to be closing on another aircraft and there was danger of a mid-air collision. Calls on guard channel, zooming in front of the hooded pilot in attempts to put him in slipstream were to no avail. Finally, at the last minute, the pilot of the *Guardian* popped his hood and pulled up just in time to avoid a mid-air collision.

Anymouse said that the procedure of shifting radio channels while one pilot is under the hood is an unwise practice in itself. However, if it does become necessary he recommends a procedure as set up in one squadron: (a) maintain a listening watch on guard channel when under the hood, (b) on a shift of frequency, radio contact should be attempted immediately. If it is not established immediately, the pilot under the hood should go contact at once and switch back to the original channel.

FOULED PLUGS

Anymouse was flying an AD-5N on a night low-level mission when a sheet of flame shot up in front of the canopy and the engine quit. "I immediately reduced throttle and advanced the mixture", he said, "The engine caught again so I climbed to 4000 feet and headed for the nearest airport about 15 miles away.

"All the instruments were reading correctly and the engine was running smoothly. My wingman took the lead and we elected to continue on to our destination which was reported VFR. I went over the bailout procedure with the crewmen; just in case. Sixty miles from destination the aircraft seemed to vibrate slightly. I reduced power slightly and kept going.

"Ten miles from the field the flight leader called for landing instructions. At this time my engine began to vibrate excessively. I declared a deferred emergency and took off more power. It was then I learned that the field was below minimums due to heavy ground fog. Also, GCA was not operating.

"The tower gave me a DF steer and I finally found the field when I flew directly over the beacon at 700 feet. After making a right-hand approach I managed to land safely on the duty runway.

"The cause of the trouble was 28 out of 36 sparkplugs were fouled plus poor headwork. *This was an accident waiting to happen.* Had I landed after the first sign of trouble I would have been a lot wiser."

Editor's Note: Amen brother! Courses of action in cases similar to Anymouse's are pretty well outlined in General Engine Bulletin 137.

ANYMOUSE

(Continued)

CHOPPER WHOPPER

The weather was CAVU, winds calm with temperature about 75 degrees. Altitude of the airport was 4000 feet and Anymouse intended to make a hovering takeoff with his HUP-2 fully loaded.

"After turnup, rotor engagement and ground check I pulled the HUP into a hover. This took practically full collective pitch and full throttle. Starting movement forward and to the right, in order to miss a civilian R6D about 100 yards ahead, I slid off the ground cushion and back to the ground. Bounced to the left three or four times on the left wheel and then finally got airborne after picking up some forward speed during the bounces.

"I estimate I missed the R6D with the rotors by about 30 yards, scattering spectators in all directions and finally getting into the air 180 degrees from the direction in which I had planned. Full throttle and collective pitch was used throughout.

"The moral of the story—At high altitudes in calm winds make a running takeoff, particularly with a full gas load in a HUP." ●

FROM THE HEADMOUSE---

"Headmouse," Dutch uncle to the Anymouse program at the Aviation Safety Center, wishes to advise his cousins in the field that beginning with this issue of the *Approach*, he will make appropriate acknowledgment of these Anymouse Reports which require answers or further action by some cognizant authority.

If Headmouse can't dig the ungarbled word himself he will forward the query or problem to the right source of good dope and report the results in the *Approach*. Such action has been taken in the past but has not been published. The action on three particularly interesting recent Anymouse communiques is reported here.

Re: T-28B Shock

For the T-28B Anymouse who received a paralyzing electrical shock when his hand touched an exposed terminal, the contractor and BuAer have been requested to investigate and comment.

Re: Deployment

For the Anymouse who expressed concern over extended cruise air operations, we are assured that the problem you mentioned is a matter of concern in the very highest levels of planning and operations, with every effort being made to reconcile training requirements with numerous other knotty problems of optimum deployment.

Re: P5M Overboost

For the P5M Anymouse who requested information on engine overboost effects, he will be pleased to know his query has prompted the preparation of an article on the subject by BuAer, which discussion will appear in a forthcoming issue of the *Approach*.

To all you Anymouse reporters whose interest in this means of presenting the troubles and problems in the field has been most encouraging, our thanks for the tips and good dope offered. This is gratifying evidence of the usefulness of this pipeline to the pilot and groundcrewman. Headmouse guarantees your suggestions and questions will receive prompt attention, and, when necessary, with action requested of the cognizant source. We're at your service—give us a growl.

(Signed)

Respectfully, *Headmouse*

NEW PRODUCTS

THE *Omni-Buster*

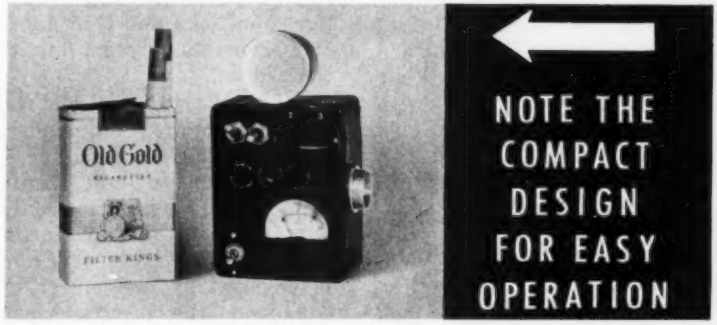
Of considerable interest to aviators is the proposed development of a device to relieve the pilot of many of his present functions such as navigation, communications, takeoffs, landings, flying the airplane and other tedious chores associated with flight operations.

Details of the device, as obtained from the AAIPFA, reveal many solutions to flight safety problems. Tentatively designated the ARC-AN-SA/W "Omni-Buster," the device would greatly reduce the aircraft accident rate by eliminating pilot error type accidents.

Compactly designed for ease of operation, the Omni-Buster is approximately the size and weight of a cigaret pack (king-sized). It is powered by a small but powerful solar energy transformer with an auxiliary atomic engine for operations at night and during eclipses.

Simple in operation, a push button selector actuates any of several push-pull circuits to give micro-second reaction to any impending normal emergency. Screened through 20,000 tiny filters, the problem is then referred to the infinite memory circuit of a digital computer for the correct or safe solution.

A primary preventer-circuit group includes a hook-skip inhibitor (for LCDRs and above), and a patented wheels-up landing eliminator which automatically spot-welds the gear in the DOWN position whenever the approach to runway is sensed by the scanner.



In the production model, a fuel-conservo mechanism, consisting of a map-shrinker operating in conjunction with an omni, Racon, Tacan, YG calculator and a 80-minute clock functions to increase both range and endurance without materially affecting the fuel consumed or ground covered. A Yaw Indicating Parameter Energizer (YIPE) is included to detect and compute ground-loop determinants and provides a constant reading rotation recorder. Linked with the POGO (Position On-ground, Off-ground) bounce-counter, and a drift sensing element, the pilot is effectively bypassed to accomplish precision landings without visual reference to any instrument.

Communications problems are solved through the use of a 3292-channel UHF/VHF 3D radar transceiver combination giving simultaneous reception on all 3292 frequencies. A "mumble-modulator" variation of the wartime "scrambler" effectively re-distorts all of the pilots transmissions to give complete intelligibility, and also enables him to make all position reports before leaving the ground—a considerable saving in time.

Present information on the ARC-AN-SA/W Omni-Buster does not indicate when the device will be available for issue, and pilots are advised that pending the introduction of such a device, a similar device, providing identical information may be found in every Navy aircraft. This unique component, rarely employed to its full capabilities, is sometimes referred to as the Mark I Brain, and is standard issue to all pilots. Properly energized, the Mk. I is the most perfect safety device known to man. ●

Truth and Consequences

A DIGEST OF RECENT AIRCRAFT ACCIDENTS

VU TBM

OBSTACLE COURSE

The respotting of a gas truck to comply with an existing safety instruction; that of spacing fuel trucks 50 feet apart, eliminated one hazard and created another. Four days after compliance with the order a TBM was taxied into a gas truck which had been parked in an area without the advisory recommendations of other squadron departments concerned.

The pilot had been taxiing through the area for the past 14 months and this time, as was the custom for pilots leaving the line, the pilot was taxiing at will to reach the main taxi area. Unaware that a positive 45-degree turn to the left was now necessary after clearing line aircraft, a collision with the gas truck on the right resulted.

In remphasizing that safety is an *all hands* responsibility, the AAR board stressed the importance of meeting changing conditions and that experienced personnel must impart their ideas.

"It is unfortunate," said the Fleet Air Wing Commander, "that it usually takes an accident to bring to light unsafe practices. This accident bears out the fact that no matter how active a safety program is pursued by one officer or squadron, the program will fail as long as it is not followed through by all hands. In any aviation activity, every officer and man is a safety officer and should take an active part in safety programs."

VT T-28

DOUBLE TROUBLE

No, folks, this is not a double exposure, although you might consider the two almost identical pictures of up-ended T-28s as painful examples of double jeopardy—from the same cause.

Varying only slightly in detail, except for the time and distance—10 days and a thou-

VF F9F

UNDERSHOT—During the latter part of a routine day fam hop in a F9F-5, the pilot climbed to an altitude of approximately 40,000 feet. At this point, auto-acceleration was experienced. When throttling back did not reduce RPM to the selected 95%, the pilot commenced a letdown to relieve the auto-acceleration, with throttle in idle position.

sand miles apart, the two accident reports from which these pictures were taken read somewhat like tape recordings of each other.

In neither case was weather a major contributing factor; runway length in one instance was 3370 feet, and wet; in the other case the runway was 4500 feet long. The wind in each situation was calm to four knots. In one instance the approach was high and fast, with touchdown made halfway down the runway. The other report describes the approach as "normal in every respect," but this airplane, too, landed halfway down the runway. Obviously neither pilot attempted a wave-off when an unhealthy situation became apparent. Both pilots attempted to use aerodynamic braking and did not employ mechanical braking immediately after touchdown. Both pilots were instructors, in the front cockpit.

One plane sustained overhaul damage, the other received substantial damage. Injury to pilots was limited to severe lacerations of pride.

And before you, dear reader, are mistakenly moved to loud belly chuckles over this pair of doozies, try rather to remember a couple of pretty fundamental lessons to be learned therefrom, hmmm?

At 33,000 feet, no change having occurred (RPM still 100%), pilot switched to emergency, then back to primary, still with no results. At 30,000 feet, tailpipe temperature dropped to below 200°, and RPM dropped off. At 23,000 feet the pilot began a series of normal airstarts. These and shotgun ignition attempts failed. During this time the pilot was heading toward his home base. At 11,000 feet, in vicinity of airfield, he declared an emergency and approached the air station. Landing was short of runway, in 36 feet of water, due to pilot's forgetting to retract divebrakes throughout the entire letdown.

The investigation disclosed that there were no physical discrepancies to the aircraft fuel system or engines except a small amount of rust in the fuel control governor, lending credence to the pilot using improper starting procedures (nose not high for drainage of excess fuel) and experiencing a wetout. This rust also explains failure of emergency fuel system.

In addition to errors in starting procedure and landing approach (failure to retract divebrakes), the pilot violated squadron doctrine in going to 40,000 feet which was not authorized for his fam hop. Pilot survived with "B" injuries as a result of safety equipment and survival training.

AIRPORTIT

Sorry indeed is the plight of the poor aviator who makes a perfect approach and a 4.0 landing, only to drop a wheel into an unmarked drainage ditch, or snags a wingtip on a truck parked on the taxiway.

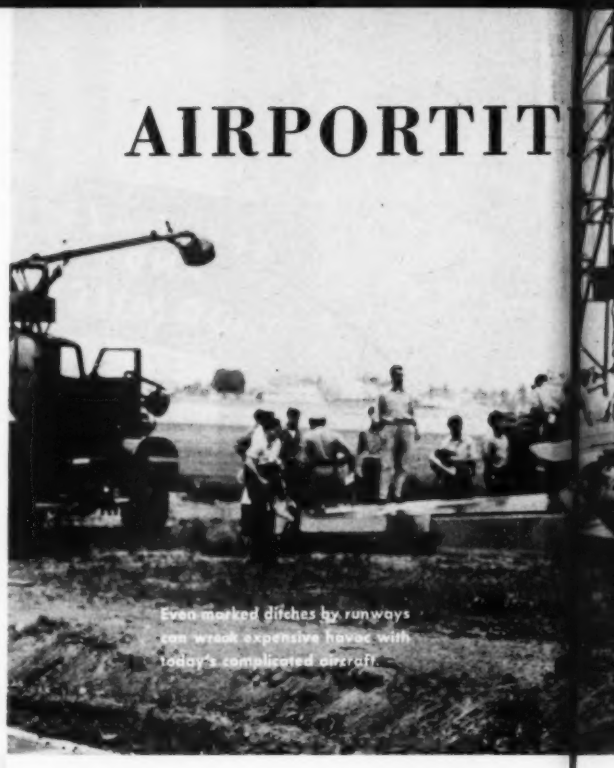
Perhaps these pictures of a few cases in point might just keep *you* from becoming a victim of "airportitis."

Airportitis is a disease that attacks an otherwise healthy air station with a rash of unmarked holes and ditches and the like. The malady is characterized by a scattered outbreak of concealed hazards along taxiways, and by the appearance of cunningly placed obstructions around parking ramps and warm-up aprons.

A usually reliable symptom of airportitis is the appearance of construction equipment on the field, usually an indication of an epidemic of taxi troubles.

The pilot who chooses to barrel along the taxiway without benefit of the miracle vaccine SNL (Swivel Neck Lookout) may find himself running a gantlet of unmarked vehicles, broken pavement, and soft shoulders, for which there's no natural immunity.

The best cure for this affliction, which exacts a heavy toll in injured prides and planes, is found in the responsibility of safety officers to maintain clear operating areas, and insure that known hazards are adequately marked. Frequent inspection of runways, taxiways, approaches and aprons will make a taxi antitoxin and a healthy accident rate.

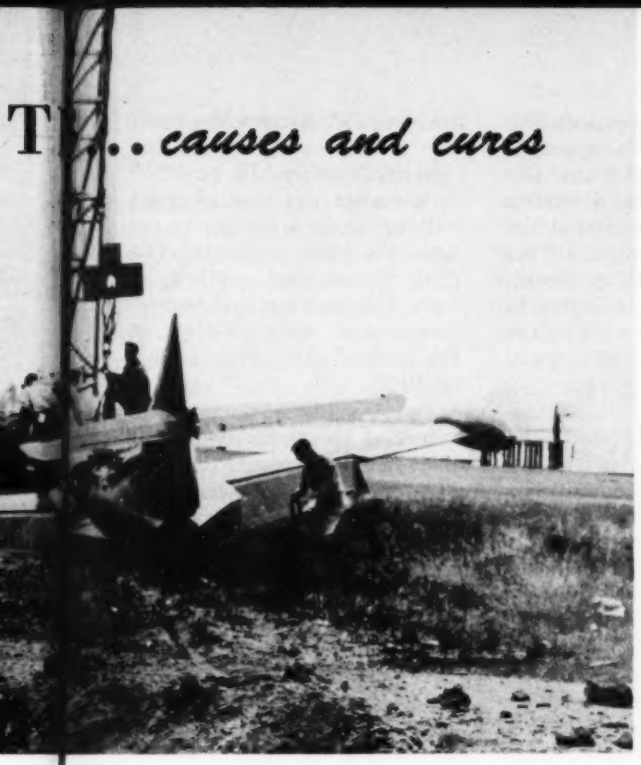


Even marked ditches by runways can wreak expensive havoc with today's complicated aircraft.

This is not an approved device for stopping these undershoots.

No markee on the ditchee and no lookee from the cockpit.

T... *causes and cures*



TV accident reminded station to correct this runway hazard.

"Suddenly I saw the red flags and hit these brakes hard"

Unpredicted shower came when TBM wandered into fuel pits where prop cut water line.

For the pilot, the real victim of the disease, there is the unchanging responsibility to avoid such hazards like the plague.

To ward off trouble then, and to avoid the painful after-effects of airportitis, the pilot should innoculate himself with the following safety serum:

1. Know the physical conditions of the air station.

2. Taxi with caution and alertness.

3. When in doubt, request and follow instructions. If still in doubt, STOP.

4. Plan your landing approach to allow for any obstacles or the condition of overrun areas.

5. When filing for strange fields, check the NOTAM.

6. Report any dangerous ground operation condition.

There's your prescription—it's a six-way dose of common sense guaranteed to neutralize taxi troubles and to relieve skippers' indigestions. For best results, apply generously to all flight operations . ●

Truth and Consequences
(Continued)

VT SNB

DOWN AND OUT—Two student pilots on an airway cross-country flight detected a burning odor in their SNB and it was discovered that the starboard voltage regulator box was smoking. The ammeters revealed an unbalanced load with the starboard generator carrying most of the load. Both generators and battery switches were secured and a decision then made to proceed directly to home base.

Near there the long check-off list was executed and the pilot referred to the handbook to review the emergency procedures. The landing gear was lowered by the emergency hand crank and both pilots visually checked the gear in the down position. Battery power was then restored and radio communications with the tower were established.

The pilot advised the tower that his generators were secured and battery switches would be secured after his current transmission and requested a green light on base leg if cleared to land. A short check-off list was completed but the gear was not rechecked on the downwind, base leg or final approach.

A green light was given by the tower as the aircraft turned onto base leg though the copilot did not recall seeing a light until the aircraft was on final approach. He believed this light to be green.

While on final approach the tower made six transmissions to the aircraft stating that the gear was not down. Flashing red lights were directed at the aircraft throughout the final approach. The runway signalman performed his duties to the extent that he went on the landing portion of the runway waving a red flag four feet square. He had not been furnished a Very's pistol. The aircraft continued in the approach and contacted the runway in a wheels-up position. There were no injuries, nor did fire occur.

In its analysis the accident board noted that the pilot exhibited good initial judgment in securing the electrical system. However his subsequent actions were adversely affected by the unwarranted belief that danger from electrical fire prohibited normal operation of the remainder of the electrical system. He resorted to lowering the landing gear without prior attempts to actuate the normal system. The pilot stated that neither he nor the copilot knew the emergency lists were printed on the back of the normal check-off lists.

Despite his precaution of referring to the handbook the pilot failed to execute the step-by-step method prescribed on the check-off lists. The landing gear circuit breakers were not pulled and the landing gear handle was not placed in the DOWN position. After omitting these initial steps the pilot then manually lowered and visually confirmed that the gear was down. Over the field battery power was restored long enough to permit

Over the field the battery was turned on long enough to extend the gear electrically.

the landing gear to retract electrically.

In view of the satisfactory utilization of radio communications with the tower in obtaining landing instructions, it was indicated by the board that the pilot unwisely deprived himself of voice communications during the landing phase. It was also felt that under the circumstances both pilots were negligent in failing to positively ascertain visual clearance with the tower.

VF F2H

FIRST THINGS FIRST—During a night FCLP the pilot of an F2H reached an altitude of 150 feet when his port engine flamed out. He nosed over slightly to gain airspeed and let his attention be directed to the engine instruments. In so doing, he lost altitude. He realized, too late, that he was very low and started a pullup just prior to hitting the water. He did not know that he had lost his starboard wheel and brake assembly when he made contact with the water.

After numerous restarts were attempted with no success, the pilot decided to land. On lowering the landing gear he received a down and locked indication; however, in going over the checkoff-list he discovered he had no starboard brake. He then decided to land at a nearby emergency field that had arresting gear.

On touchdown the airplane bounced over the cable prepared at the downwind end of the runway, but an unrigged cable on another runway was engaged.

When an emergency such as the above takes place and the altitude is a mere 150 feet, the prudent pilot will not allow his attention to be diverted from his flight instruments by over-concentrating on engine instruments. Attempts at restarts are much safer at higher altitudes.

VP PBM

PORPOISE TROUBLE—A power approach to landing was made by the pilot of a PBM with rate of descent about 150 feet per minute using half flaps. The approach was normal except for a slight nose-low attitude and the pilot stated he shifted from an instrument landing at the last second before touchdown. Ceiling was estimated 2000 feet broken with visibility 15 miles. Wind was calm though the pilot felt water ripples were adequate for altitude judgment.

Just before touchdown, at an altitude of about five feet, power was cut. Upon contact with the water abnormal deceleration was felt but the plane became airborne in a nose-high attitude, reaching about 50 feet altitude. The nose fell through and the aircraft hit the water a second time in a nose-down attitude with a severe impact. The pilot stated he knew then he was experiencing his first real PBM porpoise after 912 hours in model.

A second bounce gained about 50 feet altitude, at which time the pilot added power cushioning the third and fourth (last) bounces. Run-out and taxi to the ramp were normal.

After the second bounce the pilot knew he was having PORPOISE TROUBLE.

Major overhaul damage was sustained, which included a bent forward spar at the right center wing section at the upper engine mount; the cordwise brace at the mount section was moved forward and pulled away from rear spar with all rivets (brace to web) sheared; the hull crown forward was wrinkled.

It was the opinion of the accident board that the accident was caused by improper attitude (nose too low) upon initial contact with the water. Additionally the pilot failed to add power when the aircraft bounced into the air the first time.

Recommendations by the board included periodic briefing for all pilots flying seaplanes on the proper recovery procedures to be used in the event of porpoising. Also, pilots making power landings should plan their approaches in order that power may be left on until water contact is established.

Truth and Consequences
(Continued)

VS S2F

THE FORWARD LOOK—During a deck launch, an S2F pilot's attention was directed to the right towards the flight deck officer. He was not aware that the plane had commenced to turn slightly to port during the full power runup. After the plane started to roll the pilot observed he was heading for the port side. His attempts to correct his direction were too late and the plane went over the side.

The accident board recommended the following takeoff technique in the S2F: "Insure that the nosewheel is properly centered in its fore and aft position. This can be accomplished on the preflight inspection and/or by taxiing forward two or three feet to swing the nosewheel around.

"Run up to 30 inches manifold pressure and pass the signal for 'readiness to launch' to the flight deck officer in the following manner: (1) *Daylight,* by the pilot nodding his head. (2) *Night, (late models)* by the pilot actuating the master light switch; *(early models)* by the pilot directing the copilot over the ICS to turn on the master light switch.

"After the flight deck officer has given the 'clear deck' signal the pilot should add full throttle. While adding full throttle his attention should be focused forward to enable him to note any variation in heading while he checks the manifold pressure and tachometer readings. If he can hold the airplane in the spot with brakes, he can get a full power check there.

If the airplane commences to slide, a power check will have to be obtained during the initial roll."

NAS TV-2

POOR PLANNING — Estimated time en route for the TV-2 cross-country was one and one-half hours. The pilot had been familiarized with capabilities and limitations of the ANR-6 radio in and around thunderstorms, and was aware that UHF/DF facilities at his destination were inoperative.

Encountering a forecast squall line he crossed a saddle back at 42,000 feet and then found himself on top of a huge shelf of weather. Manual loop and ADF orientation was unsuccessful over destination and the flight was cleared to an alternate where the pilot was informed that the homer was inoperative for maintenance. Calls on GCI channel were unanswered and though station identification was not established the pilot began an ADF letdown on the range.

Breaking out VFR the pilot was unable to establish radio contact and after proceeding VFR for 10 minutes realized the ADF was not receiving a radio aid. Visual orientation was unsuccessful and after three hours flight a wheels-up forced landing was effected.

The accident board indicated the flight was poorly planned in that use of alternate navigational aids and facilities were not considered in the event of unreliable ADF performance. It was recommended that pilots be impressed with the fact that the prompt declaration of an emergency is apt to indicate good judgment rather than lack of pilot ability. ●

AERO-MEDICAL
SECTION

Always seeking ways to extend your future the flight surgeon tells "How to See at Night" and the details of making "Safe Water Landings" on the following pages . . .

The storm-swept, lightning-pierced scene around the air station was starkly dramatic as only a night scramble alert can be. Turbines screaming into the teeth of the thunderstorm which curtained the field, two fighters sprinted from their standby ready spots and threaded their way to the head of the runway. Somewhere in the darkness above, beyond the jagged streaks of lightning, were unknown intruder aircraft. The night-fighters' job: Get 'em!

In Ground Control Intercept, fighter directors leaned tensely over their glowing scopes, waiting for the appearance of the tiny blobs of light which would mean our interceptors were airborne and ready to be thrust, like avenging angels of the night, against the approaching enemy. Expectantly, the controllers awaited the crisp radio transmission which would signify the two fighters were ready to engage the intruder. Then, a crackle in radio headsets, and the message came!

"Duh, uh, hullo Tenpin, this is Blindmouse One. Uh, we just taxied into each other out here on the taxiway. We'll have to be towed back to the line . . ."

And so it goes. Some nights you can't make a nickel. Especially if you've neglected to brush up on the care and feeding of your night vision. You can be sure that our two heroes, Lieutenants Rod and Cone will be *real* interested in learning more of this business of *how to see at night*. Maybe you'd be interested too in getting the word on getting around after the sun goes down? It's pretty simple and entirely painless.

It goes like this: You'll remember that in the back of every pilot's eye, including yours, there are rods and cones. The *cones* are socia-

ble, cluster at the center, like colors and lights, and do your seeing by day. You're fairly good at using those.

On the other hand the *rods* can't distinguish color, and they function when the lights are low, very low—from very dark up to about the light level of a full moon. They are scattered toward the outer edges of your seeing apparatus. This leaves a blind spot in the center for night vision, and explains a primary rule for seeing at night:

Look past what you're trying to see. This does not mean look out of the corner of your eye.

These rods are very shy and sensitive fellows. They have to be in the dark for about 30 minutes before they function at full efficiency. This, as all pilots know, is called dark adaptation. This is the reason you sit in a dark room a half-hour before night flight—or wander around wearing red glasses—rods being least sensitive to red.

If a match flares close by after you're night adapted—you've lost your adaptation for a while. Lightning does the same thing, as our unfortunate friends discovered. So does a searchlight unless you're protected by the red-lens goggles. One handy trick, if you see a bright light coming fast, is to close one eye, thus retaining effective night vision in the other eye. This works when you haven't time to don goggles.

And incidently, this is a good place to remind air station operations officers to check their lighting. The lights on many a ramp and hangar are unshielded and thoughtlessly placed for preserving a pilot's night adaptation achieved through wearing goggles in the ready room.

Now about that trip to the beach the day before a flight . . . Exposure to bright sunlight doesn't wear off right away. It is cumulative. Two to five hours in intense sunlight results in a decreased low-light sensitivity for as long as five hours after exposure. Those who normally work in bright sunlight lose night visual acuity and range, and are very retarded folks, in their night adaptability.

This means that on any sunny day you can identify the wise pilot who plans to fly that night. He just wouldn't think of being seen in the sunlight without his sunglasses; in order that he may see in the moonlight.

Your rods are mighty particular. They demand to be babied. But until you find something better to see with, you might as well put up with them. In addition to protection from strong light, they demand oxygen. This is why you start oxygen at 5000 feet at night. Just by breathing the slightly rarefied air at 8000 feet reduces your night vision some 25 percent. And smoking three cigarets will reduce night vision 25 percent at ground level—because the carbon monoxide takes up space oxygen is supposed to have.

Two other points to remember about night vision involve not looking at any point too long. You may see a light apparently expanding or contracting, when actually it is approaching or going away.

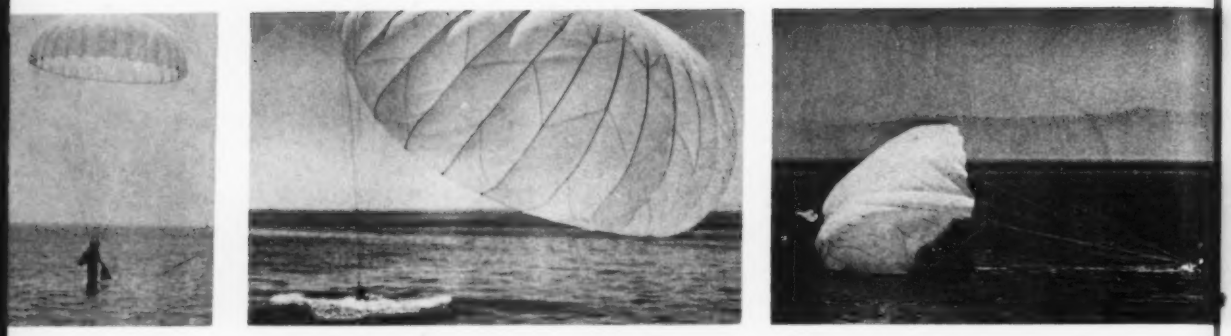
Or you may see a stationary light which appears to move and swing in wide arcs. This could be too bad if you're flying along at 50 feet watching the lead plane's tail light when you "see" it peel off, and you follow the leader.

As for vitamin A, the average diet supplies plenty and you needn't worry about it.

One little bit of advice which our two studious pilots came upon was the fact that many people scan very poorly! The gent who *sweeps* the sky with his clear and level gaze sees almost nothing! The eye sees only when it fixes on an object, so the correct way to scan is to cover an area with short, regularly spaced movements of the eye. This technique will give you the best chance of seeing the other plane first—whether he's an enemy, or merely a friend on a collision course.

This is where experience and training pay off. Because a man with only fair vision who has learned how to see has the edge on the eagle-eye who thinks he needs no advice, just because he has been seeing all his life.

Don't forget the rules for night vision when you touch down . . . Taxi accidents are costly, as Rod and Cone discovered.



Naval aviators may sometimes be subject to bailout over water . . .

Safe Water Landings . . .

Once the nylon letdown is accomplished the 14 steps of making a proper water entry become paramount . . .

THE pilot of an F9F-7 experienced flight difficulties on a morning weather reconnaissance hop and he ejected above 25,000 feet. The ejection, parachute descent and water entry were apparently normal. But the release from the parachute after water entry was not successful—the pilot drowned.

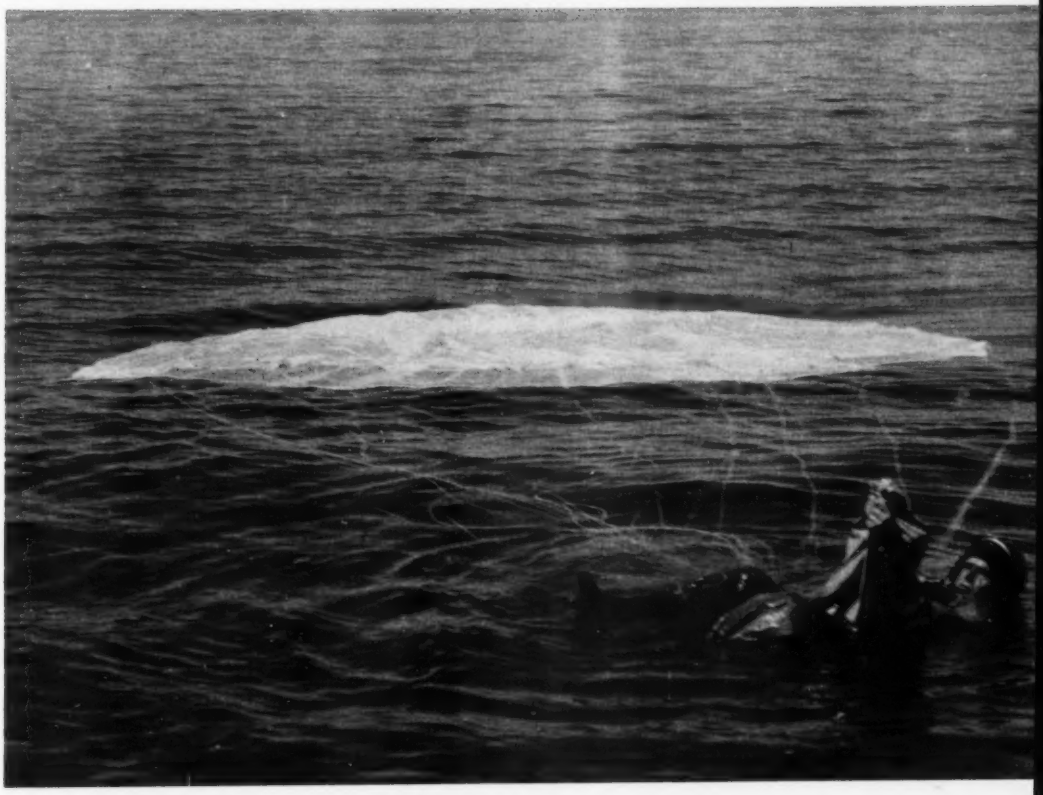
Quite possibly the pilot did not know the correct procedure for preparing for a parachute water landing, or perhaps he was one of the many who have been heard to mutter "It'll never happen to me."

It is reasonable to assume that because of the nature of their operations, naval aviators may sometimes be subject to bailout over water, with a resulting problem of survival thereafter. Because the mature thinking pilot will not discount this possibility, even if it be a remote one, it follows that a complete understanding of the operation and potential of his survival equipment is necessary.

Once a bailout has been accomplished, the paramount considerations become those of proper water entry, disengagement from the harness and the inflation of the life raft. And although none of us are eager to make a splash in naval circles, the surest way to be able to tell your sea story later is to know your equipment and procedure perfectly.

For the pilots and aircrewmen who may be doubtful about the correct procedure or who might have the mistaken notion that the process is so simple as to require little consideration, the following detailed procedure for *safe* water landings is presented. It's interesting to note that there are no less than 14, count 'em, 14 steps! They are:

1. Sit well back in the sling. It cannot be done by lifting yourself up by the risers. This is accomplished by pushing



Secure the chute to the raft for possible emergency use and signaling.

the sling under your buttocks with your thumbs.

2. Unfasten the leg straps. If the leg straps are too tight they may be loosened by simply pulling the tab attached to the quick-fit hardware.

3. Unfasten the chest strap.

4. Cross your arms over your chest to hold the harness in place over your shoulders.

5. When your feet touch the water, arch your back and throw arms overhead and slide free of the harness.

6. Inflate your life vest.

7. Recover the pararaft by pulling in the lanyard.

8. Free the pararaft and equipment from the parachute harness container.

9. Grasp the inflation toggle firmly and pull to inflate.

10. Toss the equipment container into the pararaft.

11. Enter the pararaft at the narrow end by placing the elbow in the end of the raft and pushing the raft under your body as you roll into the raft.

12. If the parachute is still floating and is within reach, secure it to the raft for possible emergency use and signalling purposes.

13. Tie all accessories to retainer straps on the raft.

14. Keep the life vest on and make sure that the life raft is attached to your person so that it cannot drift out of reach if it capsizes.

During descent, if time permits, the pararaft may be released from its container and suspended at the end of its retaining lanyard. However, extreme caution should be taken to assure that the pararaft lanyard is securely attached to the life vest, and that the lanyard runs beneath the parachute harness prior to releasing it. Inflation of the raft prior to entering the water is not recommended as there is danger of damaging the raft on landing and the time saved is negligible.

Crash Rescue

Accidents in which the aircraft turns turtle and thereby traps the pilot in the cockpit often appear to be relatively minor. However, delay in raising overturned aircraft can result in death from asphyxiation for the pilot.

The pilot may have no injury at all, but his head may be bent forward enough to compress the air passage. If he is wearing an oxygen mask and is too cramped to remove it, a damaged oxygen system or pinched hose can be fatal should there be delay in his escape from the cockpit.

In lifting an overturned aircraft with a crane the aircraft model and its condition dictates the method of hoisting. One air station has the general policy of lifting AD and similar aircraft by the wing in such emergencies. Sweptwing jets are lifted by the tail.

At whatever point the hoisting sling is placed, the primary object is the same—to raise the cockpit high enough and hold it there long enough for the pilot to be removed. Lifting the aircraft for salvage purposes is undertaken later.

If a crane is unable to approach the wreckage because of soft ground or some other obstacle, shovels are necessary to remove the ground from around and under the cockpit. Provided sufficient manpower is available, a group of men may be able to lift the fuselage high enough to get the pilot out.

Speed in lifting, however necessary, *must be accompanied by positive and secure action.* Accidentally dropping the aircraft back to the ground may aggravate the pilot's situation or increase his injuries.

Drills and practice situations should include aircraft which are inverted. The best training will be achieved by the safety officer who creates non-routine accidents which require ingenuity and speed in removing personnel pinned in aircraft.

Crash crewmen must be prepared to assist medical personnel in removing injured pilots or aircrewmen. Prompt response to requests for assistance is vital.

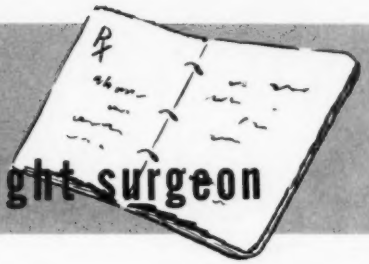
When the injuries are critical and hemorrhaging is severe, non-medical personnel may object to moving an injured man. However that's the time to act quickly. A person may appear to be beyond medical aid and yet be saved if he can receive treatment by the doctor as quickly as possible. ●

While speed is important, so is a secure hoist, lest the aircraft fall on the trapped pilot.

FIRE FILM

Latest film to be released on the subject of Crash Fire Fighting carries the number MG 8261. According to Bu-Aer, the film covers some interesting technical research on various aspects of crash fire fighting, and will be available through major film libraries.

NOTES from the flight surgeon



COLLISION COURSE

A P4Y made a successful wheels-up landing after a mid-air collision with a fighter which took 12 feet off the right wing. Five men had been on lookout. The pilot, a civilian aviation safety agent on two weeks active duty, handled the emergency calmly, in a highly commendable manner. One of his preventive recommendations should be studied universally.

"The rate of closure between aircraft is so great that while the lookout is scanning one quadrant, a high-speed aircraft could enter another quadrant on a collision course before it could be sighted and evasive action taken. It is obvious that alert lookouts are mandatory."

WRONG HELMET—RIGHT LIGHT

A pilot flew into the water on a night carrier landing approach. On the final three impacts his head hit the gunsight. When this happened the helmet struck on the metal ring holding the visor. The helmet bottomed out on his skull, causing mild contusions.

It is believed that this would not have happened had he been wearing the standard Navy helmet. The plastic visor of the helmet shattered during one of the impacts with the gunsight, and it was probably one of the fragments of the visor which caused the laceration of the right forehead.

After boarding his raft he fired a standard 20-second, Mk 13 night distress signal which burned brightly. As the raft rode the top of the swells the pilot could see the ships searching the area, but when he was in the troughs he felt that they lost sight of him, so he unhooked his one-cell life-vest light and held it overhead at arms length.

This proved to be a very helpful action, as the captain of the rescue destroyer states that the light probably saved 30 minutes of search.

EXCESS BAGGAGE

This pilot ejected, tripped his lap belt, but his oxygen mask hose remained connected to his seat, pulling his head to one side. He had failed to secure the strap at the quick-disconnect to his harness.

He ripped off his mask and was then completely free of the seat. Fortunately since he was down to about 10,000 feet he didn't need the oxygen.

On the way down he leisurely cast off his flashlight, sunglasses, and some other equipment to "avoid being weighted down" when he went in the water or being bruised if he made land. He was circled by a wingman on the way down and was soon rescued by helicopter. However, had such not been the case, calm consideration suggests the folly of throwing away survival equipment.

THE ANOXIC WAVE

Plan your flight, and let your passenger in on all the plans and procedures. Here's one pilot's testimonial to this truth.

I was enjoying a flight above the fleecy white clouds one fine day when I became aware of a weak feminine voice over my intercom. It was the first indication of trouble. My Wave aerologist passenger said she "didn't feel well." She complained of a headache and being nauseous.

Moving quickly against the primary suspect, anoxia, I directed the pale and weak girl to turn her oxygen to 100 percent. Her responses were very slow but she managed to follow my instructions. While this helped her quickly, her symptoms naturally did not vanish immediately, so I descended to 10,000 feet and flew to the nearest base. There she was hospitalized for four hours, and released to continue her trip.

I could have prevented this had I checked her out on the oxygen equipment before the flight. This was her 12th flight—but I should have known better than to expect her to be aware of all the strategems of that master villain, anoxia!

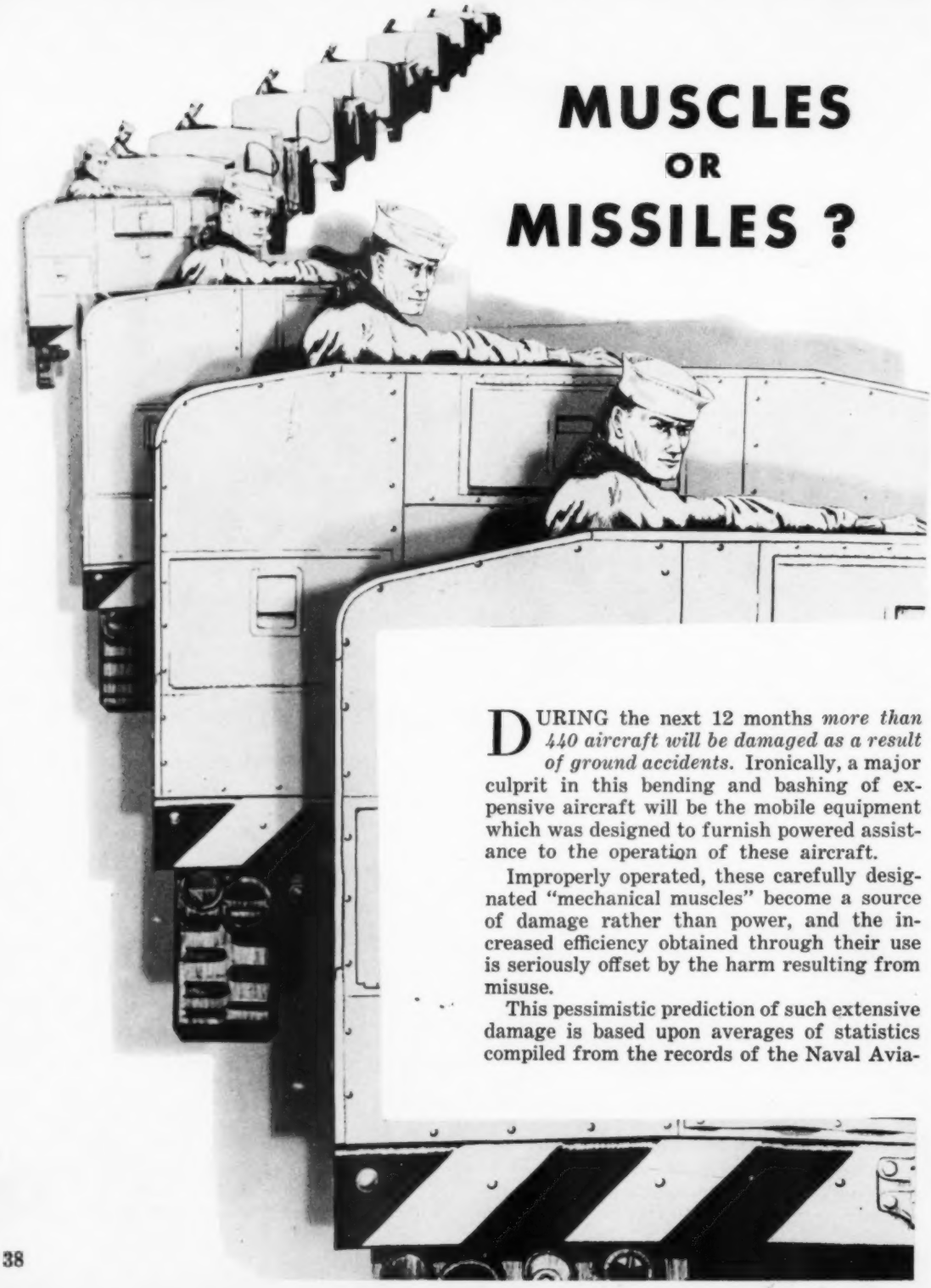
YOU THINK YOU KNOW SIGN LANGUAGE?

WELL... TAKE A TOUR WITH THIS LITTLE QUIZMASTER HERE AND SEE HOW SMART YOU REALLY ARE! (There's nothing like a slick Chickawow Hand-maiden of the Chocktawk tribe when it comes to know-how.....)

answers on page 41

With its POWER - ful muscles, the NC-5 auxiliary power unit has become "Missile No. 1" in the hands of unqualified operators.

MUSCLES OR MISSILES ?



DURING the next 12 months *more than 440 aircraft will be damaged as a result of ground accidents.* Ironically, a major culprit in this bending and bashing of expensive aircraft will be the mobile equipment which was designed to furnish powered assistance to the operation of these aircraft.

Improperly operated, these carefully designated "mechanical muscles" become a source of damage rather than power, and the increased efficiency obtained through their use is seriously offset by the harm resulting from misuse.

This pessimistic prediction of such extensive damage is based upon averages of statistics compiled from the records of the Naval Avia-

tion Safety Center.

To obtain this rather shocking estimate of anticipated damage, a review was made of accidents occurring during a 9-month period from July 1954 through March 1955 when 331 ground accidents were reported.

It has also been estimated that losses incurred for a given year through *reported* ground accidents is 28 million dollars. That, fellow taxpayer, is an awful lot of needless expense.

Of this sum, 13 million dollars, or 46% will be charged to ground accidents *exclusive* of forced landings and incidents. About 55% of these non-taxi accidents are attributable to those which occur during spotting, towing, loading, servicing and maintenance operations.

Damage to aircraft by mobile equipment will account for nearly half of these non-taxi accidents while the next biggest portion will result from improper plane handling and spotting accidents involving error in judgment of plane directors, elevator operators, beachmasters (the big-boat folks contribute too), and just "plane mishandlers." See "Can You Stop This," page 2. Another 9% of the ground accidents will result from chock-jumping, closing of hangar doors, lowering of flaps, damage by workstands and other miscellaneous causes.

Where a vehicle is involved, its operator or crew error will account for 94% of such accidents. (Half of the vehicles involved will have non-rated men operating them). Only 6% will result from actual mechanical failure such as brakes, tow tackle or power.

The vehicle most frequently involved will be the NC-5 auxiliary power unit. Chief cause-factor of NC-5 aircraft collisions will stem from fact that its operator will attempt to feed external power to the aircraft while the NC-5 is in gear either intentionally or inadvertently. Reports indicate that "jumping into gear" cause-factors are often undetermined. At any rate, the discouraging number of bent and broken aircraft is convincing evidence that everything was *not* normal.

The proximity of APUs during starts and run-ups presents a potential hazard.

Operators have earned the tractor the rating of "Missile No. 2."

Second on the frequency list will be collisions that involve tractors, closely followed by those accidents in which the forklift is the villain. Refuelers will take fourth place. Although these four vehicles dominate the list of aircraft vehicle collisions in frequency, miscellaneous vehicles including crash trucks, jeeps, oil trucks, pick-ups, stake-bodies, bomb trucks, and Tournapulls will take one-third of the toll.

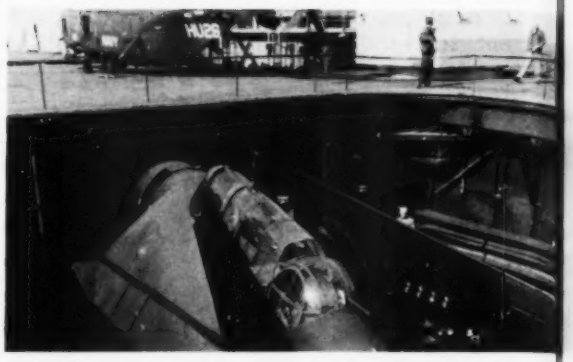
If at this point you people who push the big boats around are inclined to feel a little sorry for your land-based colleagues, don't, because of eight Navy-wide rearming boat collisions occurring in a period of 17 months, *five* "happened" to one outfit in just one month.

It has been determined that 95% of these vehicular accidents are preventable. A look at the cause factors listed on the next page will emphasize this. Precaution can be accomplished through providing operators with information which will assist in reducing the frequency and severity of accidents. Selection as well as training of personnel for their responsibilities will do much to eliminate this condition.

This review is based upon information obtained from reported accidents. Many ground accidents go unreported because damage in some instances is considered insignificant ("We can fix it ourselves" category), but a report of all accidents is required by OpNav

Principal Cause-Factors and Nature of Ground Accidents Involving Mobile Equipment

- Vehicle left in gear
- Insufficient crew
- Driver lost control
- Driver given improper guidance
- Vehicle left unattended
- Unauthorized Driver
- Mistaking of Controls
- Tow tackle failed
- Carelessness, inattention and/or lack of motivation
- Inexperience and/or slow reaction
- Depth perception or other visual error
- Error in judgment
- Driver backed into aircraft
- Lift raised into aircraft
- Plane controls moved into object
- Boat or vehicle struck aircraft



Powerful elevators demand keen and alert operators when handling comparatively delicate aircraft.

"Tilley" of Le Tourneau crane fame can be a mean gal in the wrong hands.

A lot of muscle "twixt wind water," operation of this barge crane also requires a lot of all-around smart seamanship to get aircraft aboard without damage.

Instruction 3750.6a.

Best way to avoid making reports at all is to (a) Indoctrinate drivers, operators of ground vehicles in the real responsibility of their job; (b) Train your drivers properly in the operation of their vehicle(s) and thereby eliminate those "inadvertent" type accidents; and (c) Supervise the operation of vehicles and rolling stock to insure the most efficient employment, the safest procedures and the most effective results. Accident prevention here is a positive process with results you can measure in terms of damage eliminated and efficiency gained.

What about time and effort expended to obtain this prevention?

It's a dang sight less than the time required to explain, report and repair the damaged aircraft which may result otherwise! ●

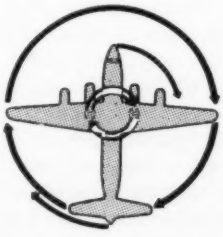
ELBOW ROOM...

Repeated damage to aircraft during towing and taxiing indicates the need for awareness concerning clearance or elbow room when handling aircraft on the ground.

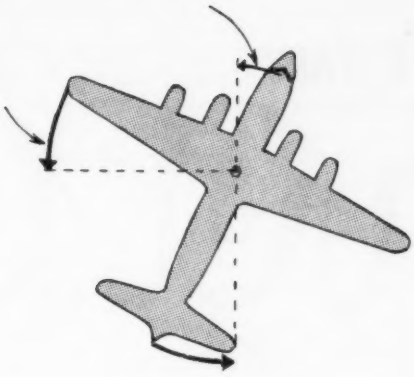
When turning, the wing tips and tail move much more rapidly than the tractor or the cockpit. When starting a pivoting turn the inside wing tip first moves in the opposite direction. When pivoting, the tips and tail travel about 2½ times as far as the wheelhouse and nose gear.

When the brakes are applied the whole aircraft does not stop like the wheels—the wingtips and tail rock and bob and swing. Plan on this extra movement and allow some extra elbow room.

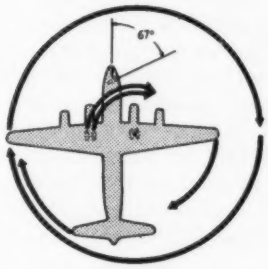
Note the accompanying sketches which illustrate some of the points and irregularities in maneuvering patterns.



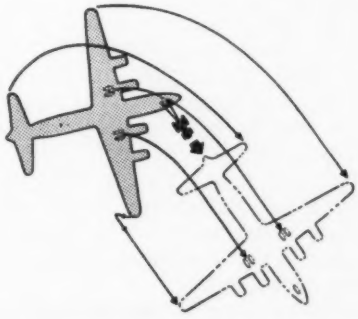
1. Center Pivot Point—Minimum Turning Radius



2. When pivoting, wing tip and tail move about 25 feet while the cockpit and nose gear move about 10 feet.

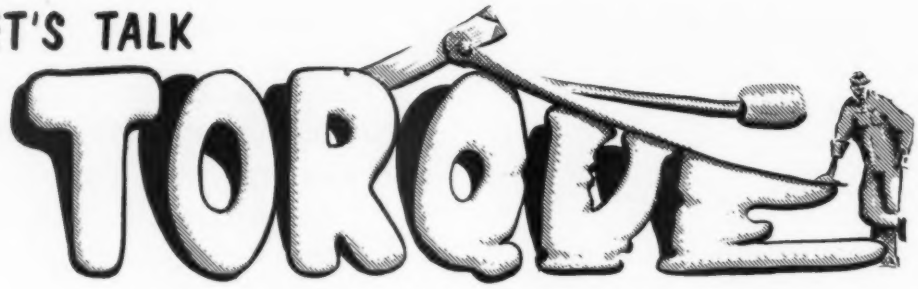


3. Nose gear turned to the maximum with aircraft pivoting about one main gear—Note greater radius required.



4. When starting a pivoting turn, inside wing tip moves in opposite direction before intended direction of aircraft movement occurs.

LET'S TALK TORQUE



ARE we torquewise? A look into a few Aircraft Accident Reports indicates we may be otherwise.

An SNJ was landed wheels-up intentionally and received strike damage ($36,670) as a result. Overtorquing of the port landing gear scissors bolt and its subsequent failure was determined to be the primary cause of the accident. The port wheel castered to a 90-degree position from normal. The threads of scissors bolt had been stripped by mechanics during assembly just previous to the flight.

A PBJ had to land wheels-up because the landing gear would not extend. Its hydraulic operating strut failed as a result of overtorquing.

Improper torquing of AD engine cowl latches caused the loss of engine cowls during flight in four instances; two resulted in accidents. A rash of FJ fuel filter bowl failures and resultant flameouts were determined to be caused by overtorquing.

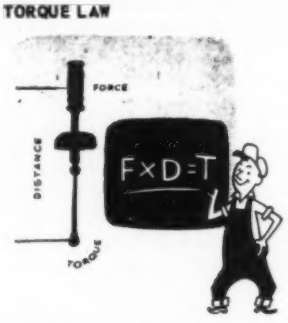
These accidents tend to illustrate the importance of torquing every nut, bolt and fastener. Without proper torque wrenches and knowledge of their use and care, it is very possible to overstress a nut, bolt or fastener. K. L. Conner, Research Engineer of Proto Tools, compares a bolt to a rubber band. A rubber band will stretch just so far and then break. This breaking point is known as the elastic limit, when the band breaks or loses its holding strength.

But undertorquing is just as bad as overtorquing. Insufficient torque results in a loose joint. Under vibration, a failure will occur sooner or later. Correct torque increases the fatigue life, because the preload is equal to or greater than the alternating load imposed. Stated simply, this means that the joint is rigid enough to prevent wearing vibration. To apply the proper torque values a torque wrench is prescribed.

An authoritative and thorough discussion of the proper use and care of torque wrenches is presented here with information supplied by engineers of the P. A. Sturtevant Company, a pioneer manufacturer of torque wrenches.

Proper Use of Torque Wrenches

Torque wrenches are today, an essential part of every mechanic's kit of tools. For this reason it is increasingly important that the limitation and possible uses of torque wrenches be thoroughly understood.



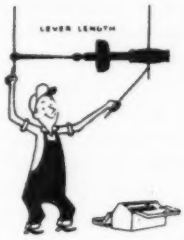
Torque is based on the fundamental law of the lever . . . that is (F) force times (D) distance equals the (T) torque about a point.

If this law is fully understood, most problems relative to torque wrenches can be solved.

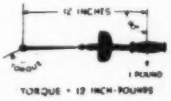
There is a practical limit to the size and capacity of any torque wrench. A normal person can pull with a force of about 100 pounds. If it were necessary to create 1000 foot-pounds of torque, a person would need a lever 10 feet long (F x D = T). Torque wrenches that are long in length are unwieldly, generally heavy and often the working space for high torque

applications will not permit their use. Whenever torque beyond the range of approximately 600 foot-pounds is required, then a multiplying device should be used in conjunction with

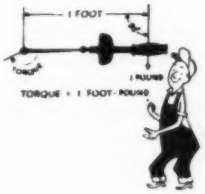
LEVER LENGTH



a normal size and capacity torque wrench. Because a multiplying device would naturally be a geared mechanism, care should be taken in



selecting one to be sure that the device is as free of friction as possible and that the stated ratio is actual.



Theoretically, it is possible on a rigid frame type of torque wrench to vary the load position on the hand grip. Some manufacturers even suggest that long pipes be used to slip over the handle grip to increase the leverage that makes it possible to pull the torque wrench to capacity. Before ever using a rigid frame torque wrench not having a concentrated hand hold position or load position or using a handle elongation pipe, a test of the torque wrench on test equipment should be made. In many cases the frame of the torque wrench will distort, resulting in inaccurate readings.

A handle elongation should never be used on a bending beam type of torque wrench. To do so will surely cause an inaccuracy. It is, however, only possible on a bending beam type of torque wrench having a concentrated load position or pivoted handle to use extension elongations that increase the length of the torque wrench from the drive square end. This has the advantage of increasing the capacity of any torque wrench.

ADAPTER

An adapter or extension is any rigid shape or form of working engaging member extending longitudinally forward from the axis of and is attachable to the drive square of the torque wrench.

ATTACHMENT

An adaptor or extension increases the capacity of any torque wrench in the ratio to the lever length of the adaptor or extension to the lever length of the torque wrench. Torque wrenches so constructed that the position of applied load can be varied on the frame, or handle of the wrench, will not work correctly with adaptors or extensions.

EXTENSION

The torque at adaptor formula is as follows:

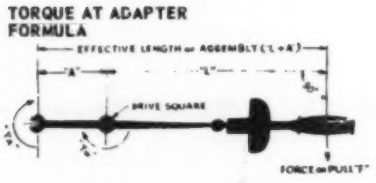
T_a = Torque exterted at the end of the adaptor

T_w = Wrench dial reading

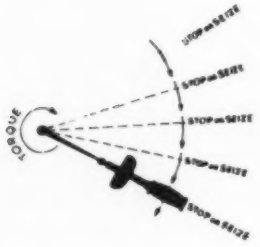
L = Lever length of wrench

A = Length of adaptor

$$T_a = T_w \times \frac{(L \text{ plus } A)}{L}$$

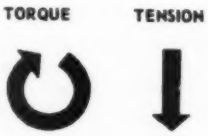


To overcome the difficulty of properly reading torque wrenches where you have a condition of damaged threads, simply add the torque resistance to the manufacturer's specification, but be sure the run-down resistance is measured on the last rotation, because the rust or burr may have become polished off at this point. In other words, if an application calls for 325 inch-pounds of torque and you find the run-down resistance is 25 inch-pounds, then tighten the fastener to 350 inch-pounds.



In reaching a final correct torque reading, you may, during the last stages of rotation, experience a set or seizing of the fastener. This is noticeable, because during the final stage of the tightening operation, there occurs a popping effect which we have all experienced. Should this set or seizing take place, it is necessary to break the set by rotating the nut or bolt in a back-off direction and again apply tightening movement with the torque wrench by a steady sweep of the wrench, during which time the torque reading should be taken. (Note: A torque wrench should never be used to loosen or back off a nut.) This procedure is necessary, since it has been found that a torque reading taken from a seized or starting position of the fastener is usually greater than the torque to which the fastener was originally applied.

Torque and tension are distinctively different and must not be confused. Torque is twist, the standard unit of measure being foot-pounds. Tension is straight pull, the unit of measure being pounds. Wrenches designed for measuring the tightness of a nut are distinctly torque wrenches and not tension wrenches.



Torque wrenches are measuring instruments and therefore can only be as good as their accuracy. Periodic checking of accuracy is generally advisable and each type and model must be correctly used if satisfactorily results are to expected.

Care of a Torque Wrench

It is important to recognize that any torque wrench is an instrument, and its purpose generally, is to measure the resistance to turning. This resistance is commonly referred to as torque. Torque is based on the fundamental law of the lever, that is, force times distance equals the moment or torque about a point. The individual responsible for a torque wrench must be familiar with the two basic types in order to properly care for and use them correctly.

There have been several types of torque wrenches. However, there are two basic ones that are used extensively today. The first is classified as a rigid frame torque wrench, and the measuring element of this type is enclosed in a case or frame. The second is a flexible beam torque wrench, and on this, the measuring element is the frame of the tool. There are a number of different designs of each type of torque wrench.

Torque wrenches of both the rigid frame and flexible beam types, having circular dial indicators, should not be dropped or stored in in tool boxes with other tools. These torque wrenches often have a rack and pinion movement, gear train, or other fragile mechanical multiplying devices to cause the pointer to travel over the face of the scale and be perceptible to the user's eye. These mechanisms, like those of a clock, may continue to function even though the tool has been subjected to jarring in a tool box or an accidental drop from a shelf, but also like a clock, that has been accidently dropped to the floor and continues to run, you could hardly depend on it for an accurate accounting of time.

Some rigid frame types of torque wrenches are cam operated. This design of torque wrench is dependent on friction to function properly and normally a spring bears against a cam follower, which engages with a cam usually on the drive square end of a torque wrench. The only method an operator has of determining when the torque setting is reached is a break-through action. Because of the coefficient of friction is a variable, lubricants are frequently used in this type of tool to reduce the friction variation and the user must be certain, properly caring for this kind of a tool, that the lubricant, is kept at a proper level to keep the cam and cam follower free for movement.

On the flexible beam type of torque wrench, the measuring element is the frame of the wrench, and therefore, care should be taken not to etch part numbers or names on this measuring element portion. To do so can cause early failure of the tool and possibly an inaccuracy.

Any of the two types of torque wrenches should be kept clean and free of corrosion. If corrosion attacks the measuring element portion of either a rigid frame or flexible beam torque wrench, or the mechanical mechanism of the wrench having this design, a dangerous inaccuracy can result and the tool may also become a hazard to use.

Under no circumstances should a user attempt adjustments on a torque wrench that may cause variations in accuracy. If the operator notes erratic movements of the indicating pointer, the torque wrench should be immediately checked for accuracy on a reliable torque tester, and if necessary, return it to the manufacturer for recalibration.

The periodic checking of accuracy for almost all designs and types of torque wrenches is a recommended practice.

The periodic checking of accuracy is recommended.

From The Ground Up

Notes and Comments on Maintenance

TOOL CHECK-OFF LIST—A pair of diagonal wire cutters played havoc with an R6D-1 when they engaged the revolving prop of number 3 engine. Damage included a gouged prop blade, which required replacement, the fuselage was punctured starboard side forward of the ice shield. A bunk and mattress inside the aircraft were also damaged.

Remnants of the diagonals found in the aircraft indicate they had engaged the prop during turn-up, on landing, taxiing or takeoff. Damage was discovered on postflight inspection. The last flight crew noticed nothing unusual despite the fact that the fuselage was fully pressurized. Time, place and personnel involved were unknown.

Foreign objects are taking their toll in damages of jet-powered aircraft and this instance proves that reciprocators are not invulnerable. Checked your operating areas for debris lately?

MANUAL OMISSION—The pilot of a JRB landed wheels-up because the port wheel would not lock down. It was determined by the accident board that the left-hand slide tube failed by shearing upward at the lower end. The slide tubes were installed with the reinforcement, P/N 188476, at the upper end instead of the lower end.

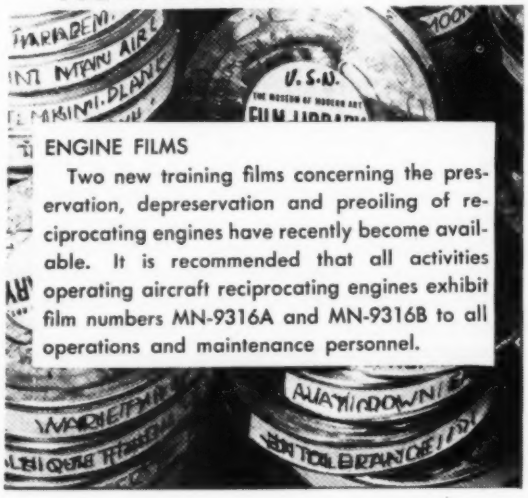
The primary cause of the accident was assigned to "error of maintenance personnel." The handbook of maintenance instructions contained no information regarding the proper method of slide tube installation. However, *Beechcraft* microfilm B412 does contain a note indicating that the reinforced end of the tube should be installed in the lower or downward position.

The accident board recommended that maintenance personnel concerned be indoctrinated in the proper installation of the slide tubes in SNB and JRB aircraft; that BuAer disseminate to all holders of the Handbook of Maintenance Instructions for SNB and JRB aircraft information indicating that the reinforced end of the slide tube should be installed at the lower end.

SINGLE-POINT HOIST OPERATION—Carelessness in operation of the single-point hoist on AJ-1 and AJ-2 aircraft may result in major damage to the hoisting mechanism or to the housing of the hoist, North American Aviation advises.

If tension is not maintained on the cable when feeding out cable under unloaded conditions, the cable may not feed out of the housing as fast as it is coming off the reel. This would permit a pile-up of cable inside the housing, resulting in a cracked or split housing. Maintain tension on the cable at all times when the cable is being fed out.

NEW FILMS



ENGINE FILMS

Two new training films concerning the preservation, depreservation and preoiling of reciprocating engines have recently become available. It is recommended that all activities operating aircraft reciprocating engines exhibit film numbers MN-9316A and MN-9316B to all operations and maintenance personnel.

TOWING..

To direct the towing of an aircraft the taxi signalman should assume and maintain a position from which the eyes of the pilot are visible. The position will be on a line extending directly forward from the left wingtip except when the assumption of this position is rendered inadvisable by special conditions such might occur aboard a carrier. He will keep the eyes of the pilot and the driver of the towing vehicle visible at all times. When necessary, an additional crewman will be stationed at the right wingtip. This crewman at all times will remain visible to the taxi signalman to whom he will direct signals.

It is of utmost importance that a qualified man is in the cockpit before movement is commenced. Wingtip guides should utilize whistles for signaling the driver of the towing vehicle. Sudden stops or starts should be avoided and close coordination between airplane and tug operating personnel should be maintained. On large planes the main gear should be allowed to roll forward when turning the airplane to prevent excessive loads from being applied to the towbar and outrigger gear. ●

★★★

YOU THINK YOU KNOW SIGN LANGUAGE

ANSWERS

1. J	6. E	11. K	16. I
2. N	7. H	12. P	17. O
3. G	8. C	13. Q	18. B
4. M	9. A	14. L	19. R
5. S	10. F	15. D	PS Insert chocks—opposite of pull chocks

SIGNS OF THE TIMES — Symbolic of modern day carrier aviation sign talk is the positive signal of the flight deck bos'n giving Fly One a "flight deck clear for recovery." On the other hand the number of aviation accidents which result from misunderstood signals indicate there's a heap o' talk going on among airmen that isn't being understood and that's the reason for the chocktalk with the comely Chickawow Hand-Maiden, page 36. For an official poster of these signs just order NavAer 00-80-ZD-1 from your nearest aeronautical publications supply office.

the Tip-tank

Miscellaneous aviation safety information

TRANSITION TRANSCRIPTION

Flight activities transitioning pilots from propeller aircraft to jets will be interested in the instruction method employed by training officers of NAS Spokane, with considerable success.

On initial receipt of its swept wing F9F-6s in January, a series of lectures was made by test pilot Bill Cochran of Grumman. During this instruction a tape recorder was employed to retain test pilot Cochran's "word" on a permanent basis. The recording was then used for all subsequent check-outs.

The pilot who was checking out sat in the cockpit with earphones on, and with the instructor at his shoulder, he listened to Cochran's description of the airplane, controls, instruments and operation. At any indication of uncertainty on the part of the pilot, the training officer explained the point to his complete understanding and the recorded instruction continued.

In this manner, each pilot received a standardized check-out of unvarying consistency. Eighty-two percent of the pilots of VF-901 and VF-902 were processed in this manner, with all pilots commenting favorably on this method of instruction.

REPORT FORCED LANDINGS

Many units and commands fail to report many accidents which come under the following categories: forced landings, ground accidents and incidents. The above are reported at the rate of 70-100 per month, which represents approximately one-third of all incoming reports to the Naval Aviation Safety Center.

From this it becomes readily apparent that these occurrences are appreciable and cannot be disregarded or taken lightly if safety in naval aviation is to be realized. Many instances are unreported because of the mistaken assumption that they are isolated or will serve no useful purpose. But remember, from analysis of such events data may be derived which could be of inestimable value to the aviator. It may save his life. Never belittle the beneficial result which might come out of a few minutes of your time. Your experience may furnish the key to an unsolved problem.

A WORD TO THE WISE

The Airline Pilots Association reports that "there are numerous indications from many parts of the United States that there is an increasing laxity in accurate IFR airways flying." In its *Technical Talk for Pilots*, the ALPA notes numerous instances of "cutting corners" which have come to the attention of the CAA. Most of these reports resulted when inadequate separation between aircraft either on one airway or an adjacent resulted.

"Numerous other cases are occurring where no corners have been cut," observes ALPA, "but where VOR radials were flown on a clearance over 'color' airways.

"In one area CAA aviation safety became so concerned over the inadequate separation from the aircraft flying an adjacent airway, that flight checks were conducted to see if the low frequency ranges provided insufficient navigational guidance. The checks showed the ranges to be adequate, but that VOR was being flown even though the aircraft had filed and were cleared on an Amber airway."

There Is a Santa Claus

(Continued from back cover)

believe except what they see. They think that nothing can be which is not comprehensible by their little minds. All minds, Virginius, whether they be men's or Nav-Cads, are little. In this great universe of ours an aviator is a mere insect, an ant, in his intellect, as compared with the boundless world about him, as measured by the intelligence capable of grasping the whole of truth and knowledge.

Yes, Virginius, there is a Santa Claus. He exists as certainly as Navy Regulations and operations orders and watch bills exist, and you know that they abound and give your life its highest beauty and joy. Yes he exists as certainly as Roger passes, perfect Charlie patterns, 92% gunnery scores, 4.0 check rides and undelayed recoveries. He is as real as your selection for promotion, as a service-wide pay raise or that bull's eye scored by skidding one into the target. He is as wonderfully real as that spin recovery beneath the overcast or that DR letdown that brought you out precisely over the field. He is as marvelously material as the hydraulic pressure that kept your wings spread when you forgot the pin.

Alas! Virginius, how dreary would be the world if there were no Santa Claus! It would be as dreary as if there were no gouges, or holes in the overcast or lost plane procedure, or no ensigns. There would be no child-like faith then, no leave, no cross-country RONs or accurate position reports to make tolerable this existence. We should have no enjoyment, except in sea duty and EDO. The eternal delight with which flying fills the world would be extinguished.

Not believe in Santa Claus! You might as well not believe in the flight schedule. You might get your skipper to assign men to watch all the uptakes around Fly One on Christmas Eve to catch Santa Claus, but even if they did not see Santa Claus coming down the stacks, what would that prove? Nobody, not even the Flag sees Santa Claus, but that is no sign there is no Santa Claus. The most real things in the world are those that neither ensigns nor men can see. Did you ever see the air officer in the air, or a landing signal officer make a carrier landing? Of course not, but that's no proof that they are not there. Nobody can conceive or imagine all the wonders there are unseen and unseeable in the world.

You can probe a thunderstorm with radar to see what makes the turbulence inside, but there is a veil covering the unseen world which not the strongest search gear, nor even the united strength of all the preflight muscles in the program could tear apart. Only BuPers orders, OpNav Instructions, pilots handbooks, E6B computers and the Vn diagram can push aside that curtain and view and picture the supernal beauty and glory beyond the overcast. Is it all real? Ah, Virginius, in all this western world there is nothing else real and abiding.

No Santa Claus! Thank God! he lives, and he lives forever. A thousand years from now, Virginius, nay ten thousand years from now, he will still gladden the hearts of aviators who fly safely from Christmas to Christmas! ●

* Suggested by the famous "Yes Virginia" editorial.

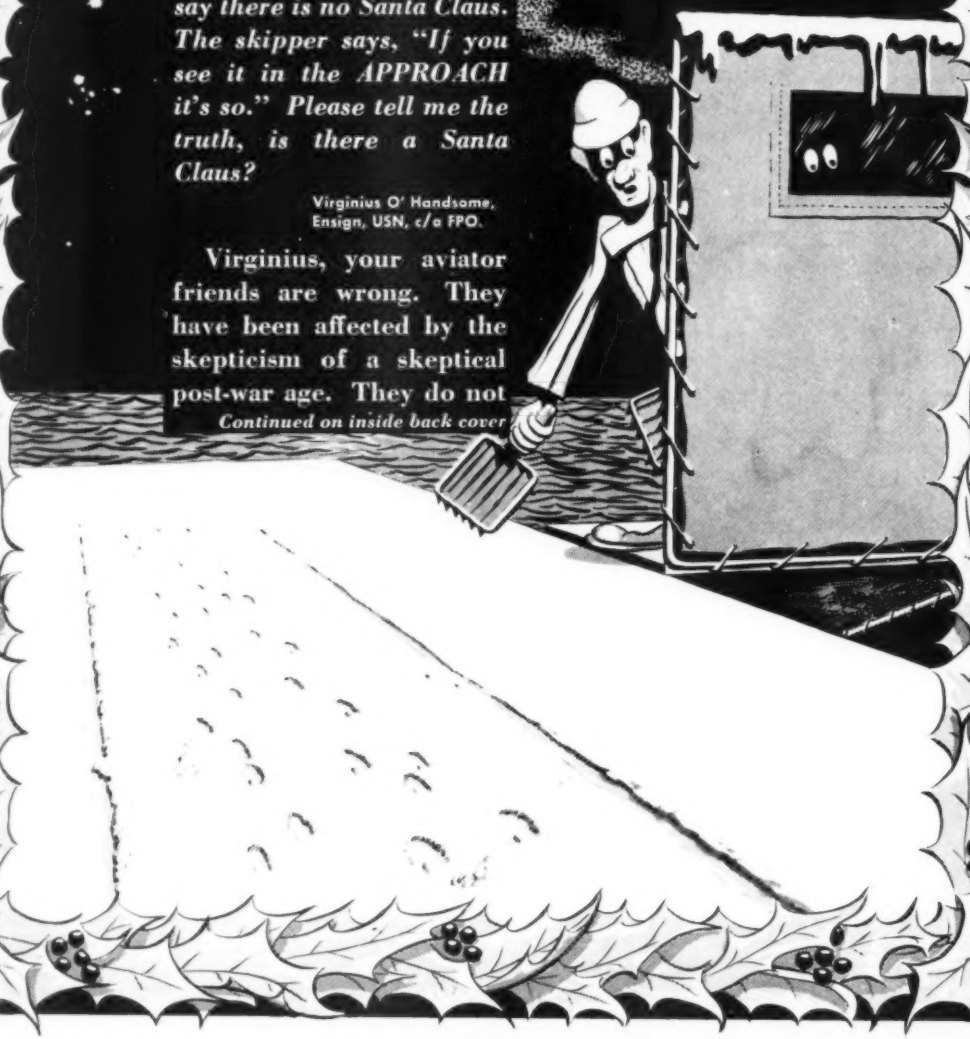
There Is A Santa Claus

We take pleasure in answering at once and thus prominently the communication below, expressing at the same time our great gratification that its faithful author is numbered among the friends of the *Approach*.*

Dear Editor:

I am 28 years old. Some of my naval aviator friends say there is no Santa Claus. The skipper says, "If you see it in the APPROACH it's so." Please tell me the truth, is there a Santa Claus?

Virginius O' Handsome,
Ensign, USN, c/o FPO.

Virginius, your aviator friends are wrong. They have been affected by the skepticism of a skeptical post-war age. They do not

Continued on inside back cover